Preliminary PFAS Assessment

Mining Area C

CW1173100



Prepared for

BHP Billiton Western Australia Iron Ore

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Cardno

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Executive Summary

Introduction

BHP Billiton Western Australia Iron Ore (BHP WAIO) engaged Cardno (WA) Pty Ltd (Cardno) to undertake a Preliminary Per and Poly-fluoroalkyl Substances (PFAS) Assessment at Mining Area C (herein referred to as 'the Site' or MAC). The Site is located approximately 110 kilometres (km) northwest of Newman in the Pilbara region of Western Australia (WA).

Objectives

The overarching objective of the investigation is to identify potential source areas and provide a high-level understanding of potential (PFAS) Source-Pathway-Receptor (S-P-R) linkages associated with MAC and assess the potential risks to human health and the environment.

Site Characteristics

- The Site operates under licence L7851/2002/6 issued by the Department of Water and Environmental Regulation (DWER) within Mining Tenement ML281SA and under Ministerial Statement MS491;
- Open pit mining techniques, ore processing methods and associated infrastructure are utilised and present on-site, including:
  - Mining of ore using conventional, progressive, open pit mining methods;
  - Mine dewatering in order to access ore located below the water table;
  - Groundwater abstraction using a network of bores and in-pit sumps to meet the water demand for the Site;
  - Water disposal infrastructure;
  - Waste management facilities (including inert and putrescible landfills; and bioremediation farms);
  - Accommodation camps and ancillary support operations i.e., Airport; and
  - Use of workshops, consumable storage areas, offices, and other service facilities (such as the bulk ammonium nitrate and explosive storage facility) and infrastructure required (including fuel storage areas, refuelling stations and washdown facilities) for the operation of the mine.

Scope of Work

The assessment included the tasks summarised below:

- Document review;
- Site Inspection, including limited opportunistic sediment and surface soil sampling;
- Identification of Areas of Potential Concern (AoPC) incorporating BHP WAIO registered contamination areas and sites identified during the Cardno site inspection;
- Completion of the field assessment across the identified AoPC and groundwater assessment, including:
  - Collection of 98 surface soil samples;
  - Collection of 21 sediment samples;
  - Collection of 19 surface water samples;
  - Collection of four groundwater samples from existing groundwater monitoring bores;
  - Collection of 24 groundwater samples from groundwater production (dewatering) bores;
  - Collection of two samples from potable water supply bores; and
  - Collection of two samples from managed aquifer recharge (MAR) bores.

Identified Potential Source Areas

On completion of the field assessment the results indicated that there are five potential source areas, where PFAS is present and considered to potentially pose a risk, namely:

- AoPC 1 - Coondawanna Airport;

- AoPC 7 - New Firefighting Training Ground;
- AoPC 9 - MAC Medical Centre;
- AoPC 10 - Heavy Vehicle Workshops; and
- AoPC 12 - Bioremediation Farm.

PFAS was identified within surface soil, surface water or sediment at each of these AoPC, including concentrations that exceed the relevant adopted assessment criteria.

Of the 51 surface soil and sediment samples across the five AoPC's, 38 samples recorded leachate concentrations above the adopted ecological assessment criteria. The highest concentrations were primarily associated with unregulated compounds (such as 6:2 FTS), likely associated with the use of 'newer' C6 firefighting foams. The elevated concentrations within leachate indicates PFAS compounds have historically been discharged to the environment at these locations. The connection to groundwater is currently not understood and is considered a residual data gap.

Given the large site area, complex geology and depth to groundwater, exceedance of criteria does not indicate an immediate risk to receptors, although further investigation is required to delineate the extent of the impacts and potential for future migration.

Recommendations

Following refinement of the CSM the identified AoPC were also considered to represent potentially complete S-P-R linkages, largely due to limited delineation of potential impacts at identified source sites.

During the site visit, six BHP contaminated sites reference areas were unable to be accessed and should be investigated as part of future investigations.

- AC-04 – Inert Landfill;
- AC-05 – Area C Landfill – Putrescible;
- AC-06 – Historical Sewerage Irrigation Area;
- AC-13 – BioMax Evaporation Pond – OHP;
- AC-17 – Packsaddle Historical Sewerage Irrigation Area; and
- AC-19 – BioMax Evaporation Pond – E Deposit.

In addition, it is recommended that the identified AoPC undergo further assessment as summarised below:

- Investigation of soils at depth to assess subsurface PFAS mass:
  - AoPC 1 (AC-16) - Coondawanna Airport;
  - AoPC 7 (No BHP ID) - New Firefighting Training Ground;
  - AoPC 9 (AC-22) - MAC Medical Centre; and
  - AoPC 10 (AC-09) - Heavy Vehicle Workshops.
- Assessment on the nature of the bioremediation cells and source of material transferred to the cells in terms of material management:
  - AoPC 12 (AC-03) - Bioremediation Farm.
- Installation of groundwater monitoring bores down-gradient to assess potential groundwater impacts migrating to nearby receptors:
  - AoPC 1 (AC-16) - Coondawanna Airport;
  - AoPC 7 (No BHP ID) - New Fire Fighting Training Ground;
  - AoPC 9 (AC-22) - MAC Medical Centre;
  - AoPC 10 (AC-09) - Heavy Vehicle Workshops; and
  - AoPC 12 (AC-03) – Bioremediation Farm.

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List of Abbreviations and Units

Chemical Names

PFAS	Per- and poly-fluoroalkyl substances
PFBS	Perfluorobutane sulfonic acid
PFPeS	Perfluoropentane sulfonic acid
PFHxS	Perfluorohexane sulfonic acid
PFHpS	Perfluoroheptane sulfonic acid
PFOS	Perfluorooctane sulfonic acid
PFDS	Perfluorodecane sulfonic acid
PFBA	Perfluorobutanoic acid
PFHxA	Perfluorohexanoic acid
PFHpA	Perfluoroheptanoic acid
PFPeA	Perfluoropentanoic acid
PFDA	Perfluorodecanoic acid
PFUnDA	Perfluoroundecanoic acid
PFDoDA	Perfluorododecanoic acid
PFTrDA	Perfluorotridecanoic acid
PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFTeDA	Perfluorotetradecanoic acid
FOSA	Perfluorooctane sulfonamide
MeFOSA	N-Methyl perfluorooctane sulfonamide
EtFOSA	N-Ethyl perfluorooctane sulfonamide
MeFOSE	N-Methyl perfluorooctane sulfonamidoethanol
EtFOSE	N-Ethyl perfluorooctane sulfonamidoethanol
MeFOSAA	N-Methyl perfluorooctane sulfonamidoacetic acid
EtFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid
4:2 FTS	4:2 Fluorotelomer sulfonic acid
6:2 FTS	6:2 Fluorotelomer sulfonic acid
8:2 FTS	8:2 Fluorotelomer sulfonic acid
10:2 FTS	10:2 Fluorotelomer sulfonic acid

Technical Terms

AFFF	Aqueous Film Forming Foam
ANZECC	Australian and New Zealand Environment and Conservation Council
AoPC	Areas of Potential Concern
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
AS	Australian Standard
BGL	Below Ground Level

BHP	BHP Billiton
BOM	Bureau of Meteorology
CEC	Cation Exchange Capacity
CoC	Chain of Custody
CoPC	Contaminant of Potential Concern
CS	Contaminated Site
CSM	Conceptual Site Model
DA	Designated Area
DER	Department of Environment and Regulation
DO	Dissolved Oxygen
DPaW	Department of Parks and Wildlife
DQI	Data Quality Indicator
DQO	Data Quality Objective
DRF	Declared Rare Flora
DSI	Detailed Site Investigation
DWER	Department of Water and Environmental Regulation
EC	Electrical Conductivity
EPA	Environment Protection Authority
EMW	Electro Magnetic Wand
FFFTG	Former firefighting training ground
FS	Feasibility Study
GDA	Geocentric Datum of Australia
GME	Groundwater Monitoring Event
GPR	Ground Penetrating Radar
HEPA	Heads of EPAs Australia and New Zealand
HV	Heavy vehicle
IBRA	Interim Biogeographical Regionalisation of Australia
LCS	Laboratory control samples
LOR	Limit of Reporting
LV	Light vehicle
MAC	Mining Area C
MAR	Mandatory Audit Report
MGA	Map Grid of Australia
N/A	Not Applicable
NAPL	Non-Aqueous Phase Liquid
NATA	National Association of Testing Authorities
NJV	Newman Joint Venture
ORP	Oxidation Reduction Potential
OWS	Oil water separator
PPE	Personal Protection Equipment
PSI	Preliminary Site Investigation
QA	Quality Assurance
QC	Quality Control

RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
S-P-R	Source-pathway-receptor
SWL	Standing water level
TDS	Total dissolved solids
UCS	Unified Classification System
WAIO	Western Australia Iron Ore
WWTP	Wastewater treatment plant

Units

°C	Degrees Celsius
Ha	Hectares
L	Litre
m AHD	Meters Australian Height Datum
m BGL	Metres Below Ground Level
m btoc	Metres below Top of Casing
mg/L	Milligram per Litre
µg/L	Micrograms per Litre

1 Introduction

BHP Billiton Western Australia Iron Ore (BHP WAIO) engaged Cardno (WA) Pty Ltd (Cardno) to undertake a Preliminary Per and Poly-fluoroalkyl Substances (PFAS) Assessment at Mining Area C (herein referred to as 'the Site' or MAC). The Site is located approximately 110 kilometres (km) northwest of Newman in the Pilbara region of Western Australia (WA), as shown in Figure 1, Appendix A.

1.1 Background

BHP WAIO currently operates a number of Iron Ore mines and associated rail and port infrastructure within the Pilbara region of WA. Current mining operations include the:

- Eastern Ridge hub, located approximately 5.0 km east of Newman;
- MAC, located approximately 110 km northwest of Newman;
- Newman Joint Venture (NJV) hub, located approximately 2.0 km west of Newman and consists of Mount Whaleback;
- Wheelarra Hill (Jimblebar) Mine, located approximately 35 km east of Newman; and
- Yandi Mine, located approximately 120 km northwest of Newman.

Ore from the Pilbara operations is transported to Port Hedland via the BHP Billiton Newman to Port Hedland mainline (and associated spur lines). Ore is then shipped out through Port Hedland at the BHP Billiton facilities at Nelson Point and Finucane Island.

MAC operates under licence L7851/2002/6 issued by the Department of Water and Environmental Regulation (DWER) within Mining Tenement ML281SA and under Ministerial Statement MS491.

1.2 Objectives

The overarching objective of the investigation is to identify potential source areas and provide a high-level understanding of potential (PFAS) Source-Pathway-Receptor (S-P-R) linkages associated with MAC and assess the potential risks to human health and the environment.

1.3 Context of Assessment

Prior to the completion of the field assessment the following tasks were undertaken:

- Document Review – Review of identified potential contamination source areas and familiarisation with previous investigations, concentrating on the hydrogeology of MAC and surrounding ore deposits and the hydrogeological conceptualisation of the local Pilbara Region. Site information, Environmental setting and knowledge base and document review information are provided in Appendix C and Appendix D;
- Site Inspection - A detailed site inspection was conducted with the aid of site plans and information obtained from the document review to understand the environmental setting and potential source areas. This information was utilised to develop of the Sampling Analysis and Quality Plan (SAQP). The site inspection was undertaken by Mark Harris (Cardno) with support from Ian Raymond (BHP WAIO) between 3 and 5 May 2021. Details of the findings of the Site Inspection are discussed within the SAQP (Cardno, 2021):
  - Cardno 2021, Sampling and Analysis Quality Plan, Preliminary PFAS Assessment - Mining Area C, CW1173100, 11 August 2021.
- Limited Surface Soil Sampling Program - During the completion of the site inspection, a limited surface soil and sediment sampling program was undertaken within the following areas to further inform the understanding of potential contaminating activities within the suspected source areas:
  - Former firefighting training ground (FFFTG);
  - New heavy vehicle (HV) washdown bay; and
  - Packsaddle wastewater treatment plant (WWTP).

- Independent Technical Review – BHP WAIO engaged a DWER accredited Contaminated Sites Auditor, Mr Ron D'Ercole of JBS&G Pty Ltd, as the Technical Advisor (TA) for this project. The SAQP was submitted to the Auditor for review and feedback incorporated into the sampling plan. The Auditor generally concurred with the sampling approach, noting the limitations of the study which is restricted to shallow surface soil sampling and utilisation of existing hydrological monitoring bores.

1.4 Relevant Guidelines

The investigation, assessment, management and remediation of potentially contaminated sites in WA is directed by the Contaminated Site (CS) Act, aided by associated industry standards and guidelines. The DWER is responsible for the enforcement of the CS Act. The scope of works was undertaken in general accordance with the following documents:

- 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/New Zealand Standard AS/NZS 5667.11:1998 *Water quality—Sampling, Part 11: Guidance on sampling of groundwaters;*
- Department of Water and Environmental Regulation (DWER), 2021, Assessment and Management of Contaminated Sites;
- Heads of EPAs Australia and New Zealand (HEPA), 2020, PFAS National Environmental Management Plan (NEMP);
- National Environment Protection Council (NEPC), 1999, *National Environmental Protection (Assessment of Site Contamination) Measure* (as amended), registered May 2013;
- U.S. Environmental Protection Agency (EPA), 2000, '*Guidance for the Data Quality Objectives Process*' (EPA QA/G-4); and
- USEPA, 2002, *'Guidance on Environmental Data Verification and Data Validation'* (EPA QA/G-8).

1.5 Standards and Basis of Assessment, Limitations and Assumptions

This assessment report 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.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. Cardno has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. The current use of the Site will remain as it was at the time of preparing this report.

The opinions, conclusions and any recommendations in this report may necessarily be based on reasonable assumptions made by Cardno, and if so, these will be clearly identified in this report. It is noted that to the extent the report relies on assumptions, these can give rise to discrepancies to the extent that they may or may not represent actual existing circumstances or eventuate to be correct assumptions.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. It is noted that site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. Cardno does not accept responsibility arising from, or in connection with, any change to the site conditions. Cardno is also not responsible for updating this report if the site conditions change.

- The findings presented within this report are primarily based upon the field and analytical results obtained throughout the assessment by Cardno such as soil, sediment, surface water and groundwater analytical data from the locations sampled. Reasonable effort has been made to collect and verify information from third parties such as anecdotal information provided by Site personnel;
- The laboratory limits of reporting and assessment levels used in this investigation were appropriate at the time of the assessment; and
- The term PFAS refers to a large number of perfluorinated and polyfluorinated substances. The analytical suite adopted for this assessment has included 28 compounds, including Perfluorooctanoic Acid (PFOA) Perfluorooctanesulfonic Acid (PFOS) and Perfluorohexanesulfonic Acid (PFHxS) for all surface soil, sediment, leachate, surface water and groundwater samples.

2 Site Inspection

A site inspection was undertaken by Mark Harris (Cardno) with support from Ian Raymond (BHP WAIO) between 3 and 5 May 2021. The site inspection was undertaken to:

- Familiarise the project team with operations at the Site;
- Undertake a visual assessment of BHP WAIO registered contaminated sites;
- Interview relevant operational personnel;
- Undertake a visual assessment of additional potential areas of concern following interviews with operational personnel; and
- Collect opportunistic samples to inform the subsequent planned investigation.

2.1.1 BHP WAIO Identified Contaminated Sites/Areas

As part of the site inspection each of the 18 BHP WAIO Identified Contaminated Sites/Areas (Table 3-1) were intended to be inspected. However, not all site/areas were accessible during the site inspection, as detailed in Table 2-1.

Table 2-1 BHP WAIO Identified Contaminated Sites/Areas

Potential Contaminated Source Areas	ID	Information
Inert Landfill	AC-04	This area was in a construction area associated with the South Flank extension and is considered to no longer exist
Area C Landfill - Putrescible	AC-05	This area was located within an area closed off for exploration drilling
Historical Sewerage Irrigation Area	AC-06	Located within an active mining area and located under a stockpile of overburden
BioMax Evaporation Pond - OHP	AC-13	Located within an active mining area and unable to arrange an escort during site inspection
Packsaddle Historical Sewerage Irrigation Areas	AC-17	Identified as a potential PFAS risk associated with closure remediation
BioMax Evaporation Pond - E Deposit	AC-19	Located within an active mining area and unable to arrange an escort during site inspection

Details of the sites/areas inspected are provided in Appendix E.

2.1.2 Inspection of Additional Areas of Potential Concern

During the site inspection four additional areas were identified by on-site environmental scientist, Ian Raymond:

- Mulla Mulla Village Wastewater Treatment Plant and Irrigation Area;
- New Putrescible Landfill;
- Western, Central and Eastern Infiltration Ponds; and
- New Firefighting Training Ground.

These areas are in addition to the BHP WAIO registered contaminated sites and observations made during the inspection of these areas are presented in Appendix F.

2.2 Firefighting Foams

2.2.1 Coondewanna Airport

During the site inspection, discussions were undertaken with two members of BHP WAIO personnel (Mark and Larry) associated with the security and emergency at the airport. They indicated that:

- There is one fire truck located at the airport, that is not permanently manned;

- Old foam utilised on-site was Fireaid 3%, with the new foam identified as Respondal ATF 3-3% (noted as a fluorine free product). The old foam was phased out in January 2021;
- Approximately 20 drums of Respondal are stored, with each drum containing approximately 20 L;
- Approximately three to four exercises are undertaken around the airport each year, with one major exercise event every second year, unsure of when the fire truck exercises started; and
- There was no specific area around the airport where the exercises were undertaken, however, recent exercises were undertaken on the airport apron and not in the vicinity of the runway.

2.2.2 Site Wide

The AFFF utilised across the Site was changed out in January 2021. The original foam utilised on-site was Fireaid 3%, that has subsequently been replaced with a PFAS free solution, Solberg 3%.

During the site inspection each emergency vehicle contained foam with the main foam storage area located at the Mulla Mulla Village Emergency Station and consisted of:

- FireAde 3% - One IBC (1,000 L), one drum (205 L) and two small drums (25 L); and
- Solberg 3% - Two IBC's (1,000 L each), one drum (205 L).

Photos of the foam products utilised and stored on-site are presented in Figure 2-1.

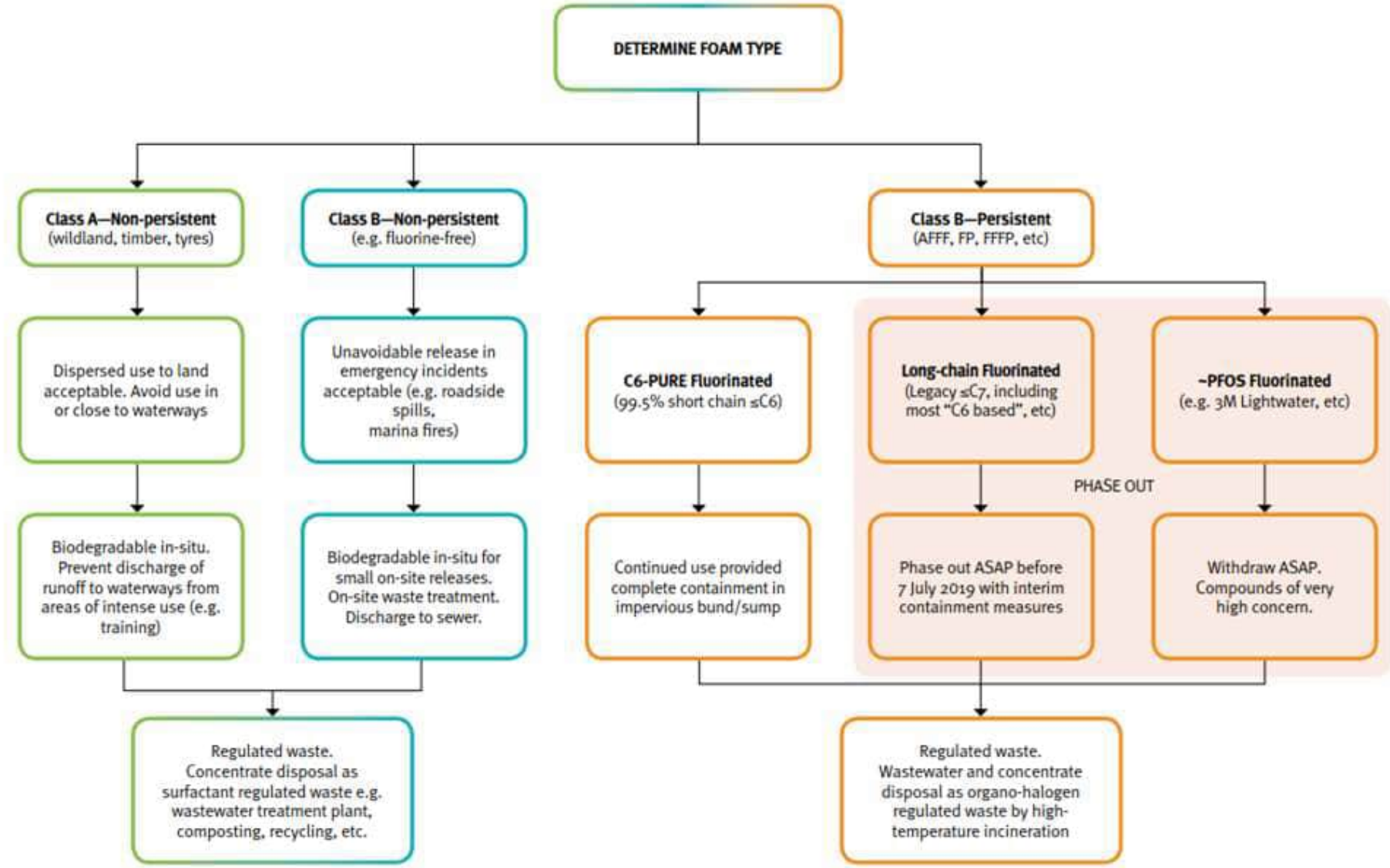
Figure 2-1 Foam Products



Class B firefighting foams are commercial surfactant solutions that are designed and used to combat Class B flammable fuel fires. All Class B foams are not the same. They can be divided into two broad categories from a PFAS perspective: fluorinated foams that contain PFAS and fluorine-free foams (F3) that do not contain PFAS. As displayed in Figure 2-2.

The current firefighting foam (Solberg 3%) is noted to be fluorine-free and so considered a class-B non-persistent solution.

Figure 2-2 Determination of Foam Type



3 Areas of Potential Concern

Following the completion of the document review and site inspection, a total of 13 AoPC were identified, incorporating BHP WAIO registered contamination areas and sites identified during the Cardno site inspection. This list excludes the six AoPC which were not able to be accessed during the site visit (see Section 2.1.1).

Due to the conflicting naming convention and the fact that some sites aren't currently assigned a BHP reference number, new AoPC numbers have been allocated for this phase of investigation. For clarity, all sites will herein be referred to by their AoPC number and BHP Contaminated Sites reference. Following completion of future investigations, it is envisioned that all areas of interest will be assigned a BHP reference allowing for the use of the AoPC nomenclature to be removed.

During the identification of AoPCs, consideration was also given to the movement of soils from identified AoPC and fire protection systems on mobile and fixed plant, including ore handling plants, rail load-out facilities and a railway spur; fuel storage areas, refuelling stations and washdown facilities. It has been reported that identified impacted soils are deposited in the Bioremediation Farm (AC-03) and there are no foam suppression systems on fixed plant.

The AoPC as determined by Cardno that were considered to require further assessment are presented in Table 3-1.

Table 3-1 Areas of Potential Concern

AoPC No.	BHP WAIO ID	Location	Activities of Concern
AoPC 1	AC-16	Coondawanna Airport	Firefighting equipment and storage
AoPC 2	Not allocated a contaminated site ID	Mulla Mulla Village WWTP and Irrigation Area	General anthropogenic use – treated wastewater
AoPC 3	Not allocated a contaminated site ID	New Putrescible Landfill	General anthropogenic use – waste disposal
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds (storage/infiltration/discharge of mine dewatering operations)	General anthropogenic use – treated wastewater
AoPC 5	AC-12	Packsaddle WWTP	General anthropogenic use – treated wastewater
AoPC 6	AC-05	Historical Putrescible Landfill	General anthropogenic use – waste disposal
AoPC 7	Not allocated a contaminated site ID	New Firefighting Training Ground	Firefighting equipment and storage
AoPC 8	Not allocated a contaminated site ID	Inert Landfill	General anthropogenic use – waste disposal
AoPC 9	AC-22	MAC Medical Centre (emergency vehicle washdown area)	Firefighting equipment and storage
AoPC 10	AC-09	Heavy Vehicle Workshops	Firefighting equipment and storage
AoPC 11	AC-10 and AC-11	New and Old Washdown Bays and Evaporation Ponds	Firefighting equipment and storage
AoPC 12	AC-03	Bioremediation Farm	General anthropogenic use – waste disposal
AoPC 13	AC13, AC18, AC19, AC23, AC24 and AC25	BioMax Facility Irrigation Areas – A total of six individual facilities	General anthropogenic use – treated wastewater

It is noted that the Firefighting Training Ground (AC-21) is understood to be assessed under a separate investigation, as part of a South Flank extension project, and is outside the scope of this investigation.

3.1.2 Groundwater

Given the Site operates over a large area with multiple activities, a broader assessment of groundwater was proposed to identify potential impacts from unknown or general activities. As such, following the existing dewatering breakdown, the site has been split into Area A, Area C and Area E, associated with identified ore deposits. It was considered that collection of samples across the broader area would assist in identifying any potential impacts from activities across the Site to support the proposed targeted AoPC investigations.

3.2 Areas of Potential Concern Risk Rating

Each AoPC was rated in accordance with its considered PFAS risk, as presented in Table 3-3. The risk rating of each AoPC will be updated as the assessment progresses and additional information becomes available. The basis of the risk rating is presented in Table 3-2.

Table 3-2 Risk Rating

Risk Rating	Criteria
Low	AoPC has not been historically investigated and activity associated with the AoPC is considered to be a minor source of PFAS. I.e. incidental or sporadic releases / discharge or non-industrial source (mine camps)
Medium	AoPC has not been historically investigated and activity associated with the AoPC is considered to an intermediate source of PFAS i.e. disposal or period discharge of AFFF impacted material
High	AoPC has not been historically investigated and activity associated with the AoPC is considered to a major source of PFAS i.e. utilisation of AFFF, routine operational maintenance of AFFF equipment or landfilling/burials of wastes.

Table 3-3 Areas of Potential Concern Risk Rating

AoPC	BHP WAIO ID	Description	Risk Rating	Previously Investigated			Potential PFAS Impacted Media			Comment
				Soil	GW	SW / Sediment	Soil	GW[1]	SW / Sediment	
AoPC 1	AC-16	Coondawanna Airport	High	✗	✗	✗	✓	✓	✗	▪ AoPC has not been investigated ▪ AFFF is considered to have been utilised during recent firefighting training exercises
AoPC 2	Not allocated a contaminated site ID	Mulla Mulla Village WWTP and Irrigation Area	Low	✗	✗	✗	✓	✓	✓	▪ AoPC has not been investigated ▪ Risk of TWW to the irrigation sprayfield has not been investigated
AoPC 3	Not allocated a contaminated site ID	New Putrescible Landfill	Medium	✗	✗	✗	✓	✓	✗	▪ AoPC has not been investigated ▪ Landfill cells are understood to be unlined
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds (storage/infiltration/discharge of mine dewatering operations)	Medium	✗	✗	✗	✗	✓	✓	▪ AoPC has not been investigated ▪ Considered as pathway for potentially impacted abstracted groundwater to the environment, discharge creeks
AoPC 5	AC-12	Packsaddle WWTP	Low	✗	✗	✗	✗	✓	✓	▪ AoPC has not been investigated ▪ Risk of impacted TWW vertically migrating to groundwater
AoPC 6	AC-05	Historical Putrescible Landfill	Medium	✗	✗	✗	✓	✓	✗	▪ AoPC has not been investigated ▪ Landfill cells are understood to be unlined
AoPC 7	Not allocated a contaminated site ID	New Firefighting Training Ground	High	✗	✗	✗	✓	✓	✗	▪ AoPC has not been investigated ▪ AFFF is considered to have been utilised during recent firefighting training exercises
AoPC 8	Not allocated a contaminated site ID	Inert Landfill	Low	✗	✗	✗	✓	✓	✗	▪ AoPC has not been investigated ▪ Landfill cells are understood to be unlined
AoPC 9	AC-22	MAC Medical Centre (emergency vehicle washdown area)	Medium	✗	✗	✗	✓	✓	✗	▪ AoPC has not been investigated ▪ Potential release of residual AFFF during cleaning of emergency vehicles
AoPC 10	AC-09	Heavy Vehicle Workshops	High	✗	✗	✗	✓	✓	✓	▪ AoPC has not been investigated ▪ Potential release of AFFF to unsealed surface during maintenance exercise
AoPC 11	AC-10 and AC-11	New and Old Washdown Bays and Evaporation Ponds	Medium	✗	✗	✗	✗	✓	✓	▪ AoPC has not been investigated ▪ AFFF from HVs wash off as part of maintenance exercise
AoPC 12	AC-03	Bioremediation Farm	Medium	✗	✗	✗	✓	✓	✓	▪ AoPC has not been investigated ▪ Potentially receives/received AFFF impacted waste surface water and sediment from washdown bays
AoPC 13	AC13, AC18, AC19, AC23, AC24 and AC25	BioMax Facility Irrigation Areas – A total of six individual facilities	Low	✗	✗	✗	✓	✓	✓	▪ AoPC has not been investigated ▪ Risk of TWW to the irrigation fields or evaporation ponds has not been investigated

4 Preliminary Conceptual Site Model

A Conceptual Site Model (CSM) is a testable representation of environmental processes on a site and its vicinity. Its purpose is to identify potential contamination sources, pathways, and receptors with a view to identifying potential and significant pollution linkages and related risks to human health and the environment. As described in this section, CSMs assist in the assessment of risk and, where required, provide a rational basis for the design of remedial solutions for soil, sediment, surface water and groundwater contamination. The CSM development process is also used to identify data gaps, uncertainties and to define the risk assessment approach. The CSM is a blueprint (a working hypothesis) for the understanding of site contamination and are updated as new information is obtained.

Identified AoPC are shown on Figures 2 to 6, Appendix A. The preliminary CSM is based on the findings of the Cardno site inspection (Cardno 2021) and identified potential source areas provided by BHP WAIO.

4.1 Contaminants of Potential Concern

This assessment is focused on the potential S-P-R linkages associated with PFAS and whilst other CoPC may exist across MAC, these are outside the scope of this investigation. The PFAS compounds considered as part of this investigation in relation to surface soil, sediment, leachate, surface water and groundwater are displayed below:

- Perfluorobutane sulfonic acid (PFBS)
- Perfluoropentane sulfonic acid (PFPeS)
- Perfluorohexane sulfonic acid (PFHxS)
- Perfluoroheptane sulfonic acid (PFHpS)
- Perfluorooctane sulfonic acid (PFOS)
- Perfluorodecane sulfonic acid (PFDS)
- Perfluorobutanoic acid (PFBA)
- Perfluorohexanoic acid (PFHxA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluoropentanoic acid (PFPeA)
- Perfluorodecanoic acid (PFDA)
- Perfluoroundecanoic acid (PFUnDA)
- Perfluorododecanoic acid (PFDoDA)
- Perfluorotridecanoic acid (PFTrDA)
- Perfluorononanoic acid (PFNA)
- Perfluorooctanoic acid (PFOA)
- Perfluorotetradecanoic acid (PFTeDA)
- Perfluorooctane sulfonamide (FOSA)
- N-Methyl perfluorooctane sulfonamide (MeFOSA)
- N-Ethyl perfluorooctane sulfonamide (EtFOSA)
- N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)
- N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
- N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)
- N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
- 4:2 Fluorotelomer sulfonic acid (4:2 FTS)
- 6:2 Fluorotelomer sulfonic acid (6:2 FTS)
- 8:2 Fluorotelomer sulfonic acid (8:2 FTS)
- 10:2 Fluorotelomer sulfonic acid (10:2 FTS)
- Sum of PFHxS PFOS
- Sum of PFAS (WA DER List).

4.2 Potential Sources

The identified potential source areas of PFAS contamination are listed below, it is noted that certain source areas (Infiltration Ponds and Biomax facilities) have been combined to form an AoPC:

> AoPC 1 (AC-16) - Coondawanna Airport;

> AoPC 2 (No BHP ID) - Mulla Mulla Village WWTP and Irrigation Area;

> AoPC 3 (No BHP ID) - New Putrescible Landfill;

> AoPC 4 (No BHP ID) - Western, Central and Eastern Infiltration Ponds;

> AoPC 5 (AC-12) - Packsaddle WWTP;

> AoPC 6 (AC-05) - Historical Putrescible Landfill;

> AoPC 7 (no BHP ID) - New firefighting training ground;

> AoPC 8 (no BHP ID) - Inert Landfill;

> AoPC 9 (AC-22) - MAC Medical Centre;

> AoPC 10 (AC-09) - Heavy Vehicle Workshops;

- AoPC 11 (AC-10 and AC-11) - New and Old Washdown Bays and Evaporation Ponds;
- AoPC 12 (AC-03) - Bioremediation Farm; and
- AoPC 13 (AC13, AC18, AC19, AC23, AC24 and AC25) - Biomax Facilities and Irrigation Areas – A total of six individual facilities.

4.3 Potential Receptors

The potential receptors, which may be adversely affected by the identified sources and associated CoPC include:

4.3.1 Human Health

- On-site workers and visitors;
- On-site groundwater users; and
- Off-site groundwater users.

4.3.2 Environmental

- Freshwater aquatic ecosystem (slightly to moderately disturbed); and
- Native aquatic, avian and terrestrial wildlife.
- Stygofauna and Troglofauna.

4.4 Preferential Pathways

The potential preferential pathways that could link the identified potential sources of contamination with the identified potential receptors include:

- Leaching of contaminants from soil into groundwater;
- Lateral migration of contaminants in groundwater via advection (and dispersion);
- Discharge of contaminants in groundwater to surface water bodies;
- Surface runoff from surficial soil impacted areas into drainage lines and surface water bodies; and
- Emission of dust from soil profile and/or groundwater to atmosphere (vertical migration).

4.5 Exposure Routes

The potential routes that could cause the identified potential receptors to be exposed to contamination (i.e. exposure routes) are presented below.

4.5.1 Human Health

- Incidental ingestion (soil, sediment, surface water and/or groundwater); and
- Inhalation of dust.

Direct contact with impacted soil resulting in dermal absorption of PFAS through the skin is not considered to be an active exposure pathway. Studies have shown that under normal pH conditions, the potential for dermal exposure of PFAS is limited and that dermal adsorption will not significantly contribute to the level of risk posed (CRC CARE 2017).

4.5.2 Environment

- Dermal absorption (soil, sediment, surface water and/or groundwater);
- Incidental ingestion (soil, sediment):
- Intended ingestion (surface water, groundwater, vegetation, and/or prey); and
- Uptake by vegetation (from soil, sediment, surface water and/or groundwater).

4.6 Potential Linkages

Potential pollutant linkages for human health and environmental receptors are presented in Table 4-1.

Table 4-1 Potential Pollutant Linkages for Human Health and Environmental Receptors

AoPC	CoPC	Preferential Pathway	Exposure Routes	Receptors	Likelihood of Pollutant Linkage (Risk)	Discussion
Human Health						
Areas of Potential Concern (AoPC 1 to AoPC 13)	PFAS Compounds*	Direct contact with potentially contaminated soil (surface/near surface). Transport of surface sediment and dust by wind and erosion.	Dermal contact, direct contact with impacted soils. Inhalation of surface/near-surface contaminated soils/dust.	▪ On-site workers (including intrusive workers) and/or visitors ▪ Off-site users	Potentially complete	Concentrations of PFAS within surface and deeper soils are unknown.
		Vertical migration of contaminants from the soil profile into groundwater.	Ingestion of groundwater through direct handling.	▪ On-site workers (including intrusive workers) and/or visitors	Potentially complete	Depth to groundwater in the vicinity of the Site is approximately 50 - 70 m BGL, however, groundwater is abstracted as part of the mine dewatering process. Groundwater abstraction across the mine area has increased as operations have grown.
		Lateral migration of contamination in groundwater.	Ingestion of groundwater through direct handling.	▪ Off-site user (groundwater abstraction for non-potable use)	Potentially complete	Concentrations of PFAS within groundwater are unknown.
Environment						
Areas of Potential Concern (AoPC 1 to AoPC 13)	PFAS Compounds*	Direct contact with potentially contaminated soil (surface/near surface). Transport of surface sediment and dust by wind and erosion.	Dermal contact, direct contact with impacted soils. Inhalation of surface/near-surface contaminated soils/dust.	▪ Native flora and fauna	Potentially complete	Concentrations of PFAS within surface and deeper soils are unknown.
		Vertical migration of contaminants from the soil profile into groundwater.	Uptake of groundwater by native flora and fauna.	▪ Native flora and fauna	Incomplete	Depth to groundwater in the vicinity of the Site is approximately 50 m – 70 m BGL. No significant stygofauna communities are noted in groundwater in the inferred hydraulic downgradient
		Surface water runoff to surface water bodies.	Ingestion of surface water through direct handling/contact. Bioaccumulation and biomagnification in the food chain (Consumption of impacted organisms)	▪ Freshwater aquatic ecosystem ▪ Native flora and fauna	Potentially complete	Concentrations of PFAS within water transferred to the Infiltration Ponds and later discharged to unnamed creeks is unknown.

Notes

* It is noted that additional CoPCs may be associated with the identified potential sources, but are outside the scope of this investigation.

5 Data Gap Assessment

A total of 13 AoPC were identified in Section 3. These areas incorporate existing BHP WAIO registered contamination sites and additional areas of concern identified during the site inspection. The AoPC are presented in Table 3-1.

A high-level data gap assessment for each AoPC has been undertaken, the results of the assessment are presented in Table 5-1. This information has been developed to prioritise the need for sampling based on S-P-R linkages that are driving potential risk at the Site.

Table 5-1 Data Gap Assessment

AoPC	BHP WAIO ID	Identification	Information	Previous Investigation	Data Gaps
AoPC 1	AC-16	Coondawanna Airport	▪ The historical use of foams for training exercises is unknown. ▪ The areas across the airport where training exercises have been undertaken is unknown.	No previous investigations have been completed.	The current condition and quality of surface soil in the vicinity of the airport apron and groundwater in the vicinity of the area is unknown.
AoPC 2	Not allocated a contaminated site ID	Mulla Mulla Village WWTP and Irrigation Area	▪ WWTP identified as a potential secondary source of PFAS (NEMP, 2020).	No previous investigations have been completed.	The current condition and quality of surface soil across sprayfields is unknown, in addition the condition and quality of water that is sprayed across the sprayfields is also unknown.
AoPC 3	Not allocated a contaminated site ID	New Putrescible Landfill	▪ Understood the landfill cells are unlined. ▪ Landfills identified as a potential secondary source of PFAS (NEMP, 2020).	No previous investigations have been completed.	The current condition and quality of surface soil across the area and groundwater in the vicinity of the area is unknown.
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds	▪ Not part of the current licence conditions to analyse surface water prior to infiltration / discharge for PFAS	No previous investigations have been completed.	The conditions and quality of surface water and sediment, in terms of PFAS, is unknown.
AoPC 5	AC-12	Packsaddle WWTP	▪ WWTP identified as a potential source of PFAS (NEMP, 2020).	Collection of two sediment samples during the Cardno site inspection.	The samples taken of dredged sediment from the treatment ponds recorded sum of PFAS concentrations above the laboratory LOR. The current condition and quality of surface water and sediment within WWTP infiltration ponds is unknown.
AoPC 6	AC-05	Historical Putrescible Landfill	▪ Understood the landfill cells are unlined. ▪ Landfills identified as a potential secondary source of PFAS (NEMP, 2020).	No previous investigations have been completed.	The current condition and quality of surface soil across the area and groundwater in the vicinity of the area is unknown.
AoPC 7	Not allocated a contaminated site ID	New firefighting training ground	▪ Identified as a potential primary source of PFAS (NEMP, 2020). ▪ Fire training area. ▪ The historical use of foams for training exercises is unknown.	No previous investigations have been completed.	The current condition and quality of surface soil across the area and groundwater in the vicinity of the area is unknown.
AoPC 8	Not allocated a contaminated site ID	Inert Landfill	▪ Understood the landfill cells are unlined. ▪ Landfills identified as a potential secondary source of PFAS (NEMP, 2020).	No previous investigations have been completed.	Thickness of landfill capping is unknown. The nature and extent of PFAS in the soil and groundwater is not understood.
AoPC 9	AC-22	Medical centre (emergency vehicle washdown area)	▪ Anecdotal evidence of AFFF released to unsealed ground.	No previous investigations have been completed.	The current condition and quality of surface soil across the area and groundwater in the vicinity of the area is unknown.
AoPC 10	AC-09	Heavy vehicle workshops	▪ AFFF contained in the fire suppression unit of each HV is released to ground during routine maintenance. AFFF tanks on each HV is changed every 12 months.	No previous investigations have been completed.	The current condition and quality of surface soil across the area and groundwater in the vicinity of the area is unknown.
AoPC 11	AC-10 and AC-11	New and old washdown bays and evaporation ponds	▪ Reports of AFFF discharged during cleaning of vehicles and residual foam on vehicles. If AFFF is present on the vehicles it would not be abstracted by OWS before entering the evaporation ponds. It is understood that the sediment within the sediment traps associated with the washdown area is transferred to the bioremediation farm.	Collection of two sediment samples during the Cardno site inspection.	The samples taken of sediment from the sediment traps recorded sum of PFAS concentrations above the laboratory LOR. The current condition and quality of surface water within the evaporation ponds has not been investigated. The current condition of groundwater has not been investigated.
AoPC 12	AC-03	Bioremediation Farm	▪ Understood the cells are unlined. ▪ Sediment from HV washdown bays is transferred to the dry bioremediation cell.	No previous investigations have been completed.	The quality and condition of sediment from the washdown deposited within the bioremediation farm has not been investigated. It is also noted the soils underlying the cells may also be impacted, however, is outside the scope of this investigation.
AoPC 13	AC13, AC18, AC19, AC23, AC24 and AC25	Biomax facilities and irrigation areas	▪ WWTP identified as a potential source of PFAS (NEMP, 2020).	No previous investigations have been completed.	The current condition and quality of surface soil across irrigation areas is unknown, in addition the condition and quality of water that is sprayed/trip fed across the irrigation areas is also unknown.

Notes

* It is noted that additional CoPCs may be associated with the identified potential sources, but outside the scope of this investigation.

The former firefighting training ground has been removed from potential source areas.

6 Data Quality Objectives

The scope of the assessment within the SAQP was developed based on a set of Data Quality Objectives (DQOs), which are focussed on achieving the primary objective (Section 1.2). The NEPM (2013) outlines the DQO process as a seven-step planning approach used to define the type, quantity and quality of data required to inform decisions relating to the environmental condition of a site. The seven steps are summarised as follows

- Step 1: State the problem
- Step 2: Identify the decision
- Step 3: Identify the information inputs
- Step 4: Define the boundaries of the study
- Step 5: Develop the analytical approach
- Step 6: Specify performance or acceptance criteria
- Step 7: Develop the plan for obtaining data

The DQOs that have been derived to address the data gaps are detailed in Table 6-1.

Table 6-1 Data Quality Objectives

DQO Step	Soil	Groundwater	Surface water and sediment
1. State the Problem	Historical uses of AFFFs and PFAS containing chemicals across the Site is not understood and may have contributed to soil, sediment, surface water and groundwater impacts on-site. The data will be utilised to support the refinement of the CSM. The overarching problem addressed by the assessment is to provide a high-level understanding of potential (PFAS) S-P-R linkages associated with MAC and assess the potential risks to human health and the environment.		
	▪ The soil condition and quality at each AoPC has not been characterised. ▪ Infrastructure remains on-site.	▪ The potential for current groundwater quality at the AoPCs to present a potential risk to human health and the environment is not understood. ▪ Concentrations of PFOS and Sum of PFHxS and PFOS has been recorded above laboratory LOR in HNPIAC0001P and HNPIAC0002P. ▪ Background groundwater condition has not been determined.	▪ The potential S-P-R linkage to nearby surface water bodies and the potential for surface water and sediment quality to present a potential risk to human health and the environment has not been investigated. ▪ Background surface water and sediment condition has not been determined.
2. Identify the Decision	What is the status of PFAS in soil, sediment, surface water and groundwater at the Site?		
	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses?	▪ Can the construction details of the groundwater bore be confirmed via construction log? Can the geology of the bore be confirmed via a lithological log from installation or from a bore in close proximity to confirm the geological unit the bore has been screened in? ▪ What are background PFAS concentrations within the vicinity of the Site and do they differ from levels present on-Site? ▪ What is the current condition and quality of groundwater and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion, potable use) or the environment (vegetation and terrestrial wildlife)? ▪ Does groundwater contribute to the recharge of creeks during the wet (or dry) season, or are creeks only recharged by seasonal rainfall? I.e. is groundwater a potential pathway of CoPC to surface water environments. ▪ Is PFAS impacted groundwater migrating off-site? ▪ Is PFAS impacted groundwater being discharged via the Juna Downs MAR and Packsaddle Infiltration Ponds?	▪ What is the potential of the applicable AoPC to influence quality of surface water and sediment (within creeks, drainage lines and areas of standing water)? ▪ Is there a demonstrated pathway for CoPC migration, and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion) or the environment (aquatic ecosystems, native avian and terrestrial wildlife)?
3. Identify the Inputs into the Decision	The proposed approach to resolve each of the principal study questions outlined in Step 2 above was detailed in the SAQP (Cardno 2021) and is summarised in Section 7. The approach to resolving each of these questions generally involved the collection of soil, sediment, surface water and groundwater data (both field and analytical) as appropriate and Tier 1 risk assessment.		
	Collection of surface soil samples across each AoPC. Soil samples will be collected from areas identified as having potential to be impacted by historical and current site activities and analysed for PFAS compounds. Soil samples will be collected as close as practically possible to potential source areas, subject to limitations from infrastructure, overhead and underground services. Soil samples will be collected to determine if a viable S-P-R linkage is established. However, it is noted that research has indicated that due to the high-water solubility of PFAS, migration of PFAS through a soil column is highly likely and subsurface PFAS mass may be masked by lower PFAS concentrations in leached/weathered soils at the surface and the collection of surficial soil samples may not reflect the magnitude of deeper soil impacts and potential PFAS mass.	Where present a groundwater bore integrity assessment will be undertaken to assess the suitability of current bores, their limitations and to establish a revised monitoring network for the purposes of the contaminated sites assessment. Groundwater samples will be collected from existing groundwater monitoring bores within the Site boundary and analysed for PFAS compounds to determine if a viable S-P-R linkage is established. Samples will also be collected from existing serviceable production bores. Production bores are utilised during dewatering programs removing water from active pit areas.	Surface water and sediment samples will be collected from water bodies and drainage channels within the Site boundary and analysed for PFAS compounds to determine if a viable S-P-R linkage is established.
	▪ The basis for adoption of assessment levels is discussed in Section 8. Where an assessment level for a given analyte or media was not available, results were reviewed against background concentrations measured within the Investigation area or other available published background PFAS concentrations. ▪ The laboratories used for analysis throughout the investigation possess National Association of Testing Authorities (NATA) accreditation for the analyses conducted.		
4. Study Boundaries	▪ The proposed lateral extent of the assessment will be limited to the Study Area outlined on Figure 1, Appendix A. ▪ The population of interest consisted of the concentrations of PFAS in the media sampled including soil, sediment, surface water and groundwater. ▪ The rationale behind the sampling design for assessment was provided in the SAQP (Cardno 2021).		
	▪ The lateral extent of the soil investigation will be limited to the Site boundaries excluding directly under site infrastructure i.e. workshop slabs etc, indicated in Figures 2 to 6, Appendix A. ▪ The vertical extent of the soil investigation will generally extend to a maximum depth of 0.15 m BGL.	▪ The lateral extent of the groundwater bore investigation will be as shown in Figure 7, Appendix A. ▪ The vertical extent of the investigation will include the underlying aquifer. Groundwater underlying the site is anticipated at a depth of approximately 50 – 70 m BGL.	▪ The lateral extent of the surface water and sediment investigation will be as shown in Figures 2 to 6, Appendix A. ▪ Sampling will occur from taps (Biomax facilities), within artificial standing water ponds (Packsaddle WWTP) and along the identified ephemeral creeks. ▪ The vertical extent of the sediment sampling will extend to 0.15 m BGL or shallower refusal. ▪ Surface water samples of drainage lines and creeks will be collected 0.1 m below the surface water level and above the sediment bed.

DQO Step	Soil	Groundwater	Surface water and sediment

Reported concentrations of the key PFAS; PFOS, PFHxS and PFOA (for which relevant assessment levels have been derived), have been used to characterise the nature, extent and magnitude of PFAS impact at the sources, pathways and receptors. Nominated laboratory limits of reporting are below PFAS assessment levels outlined in Section 8.

5. Develop a Decision Rule

The results from this investigation will generally be compared to relevant assessment criteria (where available) as defined in:

- NEPC, 1999, National Environment Protection (Assessment of Site Contamination) Measure (as amended 2013);
- DER, 2014, Assessment and Management of Contaminated Sites; and
- Heads of EPAs Australia and New Zealand (HEPA), 2020, PFAS National Environmental Management Plan.

Exceedances of adopted assessment criteria may warrant further investigation (i.e. delineation), leachability testing, risk assessment and/or remediation/validation. In the absence of specific criteria, concentrations of CoPC reported above the laboratory LOR will be reviewed and professional judgement applied to assess the detrimental effects (if any) to the beneficial user/receptor, and whether further investigation and/or assessment is warranted.

A field quality control program will include the collection of trip spikes, trip blanks, rinsate blanks, field duplicates and field triplicates.

- Acceptable limits for CoPC detected in rinsate blanks and trip blanks are <LOR.
- Acceptable limits for field duplicates and triplicates are Relative Percentage Difference (RPD) results are:

Magnitude of result	Acceptable RPD range
<10 x LOR	No limits
10 – 20 x LOR	0% - 50%
>20 x LOR	0% - 20%

Laboratory method blanks, matrix spike additions, surrogate samples and laboratory control samples will be determined as acceptable/unacceptable by the laboratory.

6. Specify Limits on Decision Error

Two types of decision errors are possible:

- Sampling errors that occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the Site (i.e. the samples collected are not representative of the Site conditions).
- Measurement errors that occur during sample collection, handling preparation, analysis and data reduction.

To minimise the potential for decision errors, the following data quality indicators (DQIs) were adhered to: completeness, comparability, representativeness, precision and accuracy. An evaluation of the quality of the data obtained during the DSI with respect to these DQIs is provided in Appendix I. Data is considered valid if an average 95% compliance of the following Data Quality Indicators (DQIs) is achieved:

- **Q/A Documentation**: Provision of appropriate work plans, DQI and DQO defined for the site and all Quality Assurance/Quality Control (QA/QC) aspects documented.
- **Completeness**: Completeness is achieved if samples have been taken from all the required sampling locations and analysed for the CoPC. Preparation of sampling documentation also forms part of the data completeness.
- **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.
- **Representativeness**: A qualitative measure of the confidence that data is representative of each medium present on the site. Use of appropriate and documented sampling methods, sampling handling, preservation and transport and holding times.
- **Precision**: RPD results for field and laboratory duplicates and triplicates are calculated.
- **Accuracy**: Accuracy is achieved if results for field and laboratory blanks, matrix spike, surrogate and laboratory control samples (LCS) are of acceptable quality. Blanks are generally expected to have results below the laboratory LOR and laboratory spike and surrogate recoveries are expected to be between 70 - 130% (depending on analyte).

In addition, it is acknowledged that sampling errors occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the Site, in that the samples collected are not representative of the Site conditions (e.g. an appropriate number of representative samples have not been collected from each stratum to account for estimated variability). However, it is noted that this preliminary assessment is the initial stage in the overarching objective of gaining greater knowledge of PFAS impacts across the Site and S-P-R linkages.

There are two main types of decision errors likely to result from the investigation:

- Type I: Concluding that the Site is contaminated when it is not. This may result in unnecessary expenditures for management, further investigation and/or remediation.
- Type II: Concluding that the Site is not contaminated when it is. This may result in impact to human health and the environment.

7. Optimise the Design for Obtaining the Data

The design of the PFAS assessment has been made in the context of ensuring that a representation of the current site condition can be achieved.

As additional information is gathered during the course of this investigation, it may be beneficial for the proposed investigation to be altered from the initial design. Changes to the proposed investigation, if considered necessary, will be made in consultation with the Client.

Furthermore, to maintain the integrity and reliability of data the following measures were adopted:

- Potential PFAS sources were established to the extent practical with consideration to existing information, investigations conducted by others and information provided by BHP WAIO.
- Field and analytical data was collected in accordance with the SAQP (Cardno 2021).
- Cardno field personnel were trained and had sufficient experience to complete the fieldwork to an acceptable standard.
- Robust field and laboratory quality assurance/quality control protocols were adopted as outlined in Appendix I.
- NATA accredited laboratories were used for all analyses including the use of suitable laboratory limits of reporting.

7 Sampling and Analysis Quality Plan

7.1 Sampling Design Documents

The assessment included a detailed program of on-site soil, sediment, surface water and groundwater sampling and analysis carried out in accordance with the sampling design and methodologies presented within the following Technical Advisor approved document:

> Cardno 2021, Sampling and Analysis Quality Plan, Preliminary PFAS Assessment - Mining Area C, CW1173100, 11 August 2021.

7.2 Nomenclature

Following the development of the SAQP, BHP WAIO implemented a new nomenclature to samples collected across their portfolio to streamline some of their historical and upcoming data sets. There was no change to nomenclature for groundwater samples, as BHP WAIO bore names were utilised.

As a result, the sample numbers have been relabelled from those identified within the SAQP as presented in Appendix G.

7.3 Deviations from SAQP

During the investigation deviations from the SAQP were necessary for varying reasons, details advising of the changes to the scope of work detailed within the SAQP are presented in the subsequent subsections.

7.3.1 Shallow Soil Assessment

The deviations from the proposed shallow soil assessment within the SAQP are presented in Table 7-1.

Table 7-1 Deviations to Shallow Soil Assessment

AoPC	BHP WAIO ID	Location	SAQP Sample ID	New Nomenclature	Comment
AoPC 6	Not allocated a contaminated site ID	Historical Putrescible Landfill	SS044 – SS047	N/A	Unable to gain access to the area to collect samples. Area was fenced with gate locked and unable to identify key holder.
AoPC 13	AC23	Biomax Evaporation Pond Central Warehouse	SS087 – SS090	N/A	Unable to gain access to the area to collect samples. Area was fenced with gate locked and unable to identify key holder.
AoPC 13	AC25	Biomax Evaporation Pond Heritage Building	SS091 – SS094	N/A	There was no evidence of the evaporation ponds during the assessment.
AoPC 13	AC19	Biomax evaporation ponds E Deposit	SS095 – SS098	N/A	Unable to gain access to the area to collect samples. The ponds are located in an operational area of the mine and unable to identify an available escort to collect samples.
AoPC 13	AC13	Biomax evaporation ponds OHP	SS103 – SS106	N/A	Unable to gain access to the area to collect samples. The ponds are located in an operational area of the mine and unable to identify an available escort to collect samples.

AoPC	BHP WAIO ID	Location	SAQP Sample ID	New Nomenclature	Comment
AoPC 13	AC24	Biomax Evaporation Pond Forward Store	SS107 – SS110	N/A	There was no evidence of the evaporation ponds during the assessment.
AoPC 13	Not allocated a contaminated site ID	Biomax Irrigation Area Core Shed	Area previously not identified as a registered contaminated site	ACCSSS0111 - ACCSSS0114	Four samples collected from across the irrigation area as displayed in Figure 22-1, Appendix A.
AoPC 13	Not allocated a contaminated site ID	Biomax Irrigation Area Workshop	Area previously not identified as a registered contaminated site	ACCSSS0115 - ACCSSS0118	Four samples collected from across the irrigation area as displayed in Figure 22-4, Appendix A.
AoPC 13	Not allocated a contaminated site ID	Biomax Irrigation Area Storage Yard	Area previously not identified as a registered contaminated site	ACCSSS0119 - ACCSSS0122	Four samples collected from across the irrigation area as displayed in Figure 22-3, Appendix A.

7.3.2 Groundwater Assessment

7.3.2.1 Groundwater Monitoring Bores

As above, field investigations were limited by site constraints and so not all proposed groundwater monitoring locations were able to be sampled. The deviations from the proposed groundwater monitoring bore are presented in Table 7-2.

Table 7-2 Deviations to Groundwater Monitoring Bore Assessment

AoPC	BHP WAIO ID	Area	Identified Bores in SAQP	Comment
AoPC 1	AC-16	Coondawanna Airport	▪ GF0935R	Groundwater monitoring bore was dry at the time of the investigation and unable to be sampled.
AoPC 3	Not allocated a contaminated site ID	New Putrescible Landfill	▪ GF0914R ▪ GE2178R	The bores are located in an operational area of the mine and unable to identify an available escort to collect samples.
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds	▪ HPSA1632 ▪ HPSA1634 ▪ HPSA1635 ▪ HPSA1636	Unable to sample groundwater monitoring bores HPSA1632, HPSA1634 and HPSA1636. All bores had a data logger with telementry system installed. Groundwater monitoring bore HPSA1635 was dry at the time of the investigation and unable to be sampled.
AoPC 6	Ac05	Historical Putrescible Landfill	▪ PSA3767R ▪ PSA0573R	Groundwater monitoring bore PSA3767R was dry at the time of the investigation and unable to be sampled. Unable to sample groundwater monitoring bore PSA0573R, the bore had a data logger with telementry system installed.
AoPC 7	Not allocated a contaminated site ID	New fire training ground	▪ HPSA0006	Groundwater monitoring bore HPSA0006 was reported to have

AoPC	BHP WAIO ID	Area	Identified Bores in SAQP	Comment
AoPC 8	Not allocated a contaminated site ID	Inert Landfill		been destroyed and unable to be sampled.
AoPC 10	AC-09	Heavy vehicle workshops	▪ HPSC0001	Groundwater monitoring bore HPSC0001 was reported to have been grouted and unable to be sampled.
AoPC 11	AC-10 and AC-11	New and old washdown bays and evaporation ponds		
AoPC 12	AC-03	Bioremediation Farm	▪ HGA0073 ▪ HGA0075	Production bores HGA0074 and HGA0077 were sampled during the investigation that are located in the vicinity of the groundwater monitoring bores.
AoPC 13	AC-13	Biomax facilities and irrigation areas	▪ GC0539RDG	Production bore HGC0200 was sampled during the investigation that is located in the vicinity of the groundwater monitoring bore.
	AC-19		▪ HGE0154	Groundwater monitoring bore HGE0154 was reported to have been destroyed and unable to be sampled.

Groundwater monitoring bores SF2203R, GF0964R, GF0965R and PSA0598R were sampled as per the SAQP. The location of the bores is displayed in Table 7-3.

7.3.2.2 Production Bores

Of the 53 production bores located across the Site and identified with the SAQP, 24 production (dewatering) bores were operating at the time of the assessment (Appendix D), with a sample collected from each 'active' bore.

The production bores have been grouped following BHP's production regime into, from west to east:

> Area E (Ore Deposit E);

> Area C (Ore Deposit C); and

> Area A (Ore Deposit A).

It is acknowledged that the bores were not originally installed for environmental monitoring purposes and so do not meet the requirements of a contaminated sites monitoring bore (DWER 2021), however, are considered suitable to provide indicative groundwater quality at this stage of investigation.

Table 7-3 to Table 7-5 display the production bores sampled across each area. Sampling locations are also displayed on Figure 8 to Figure 10, Appendix A.

In addition, samples were collected from:

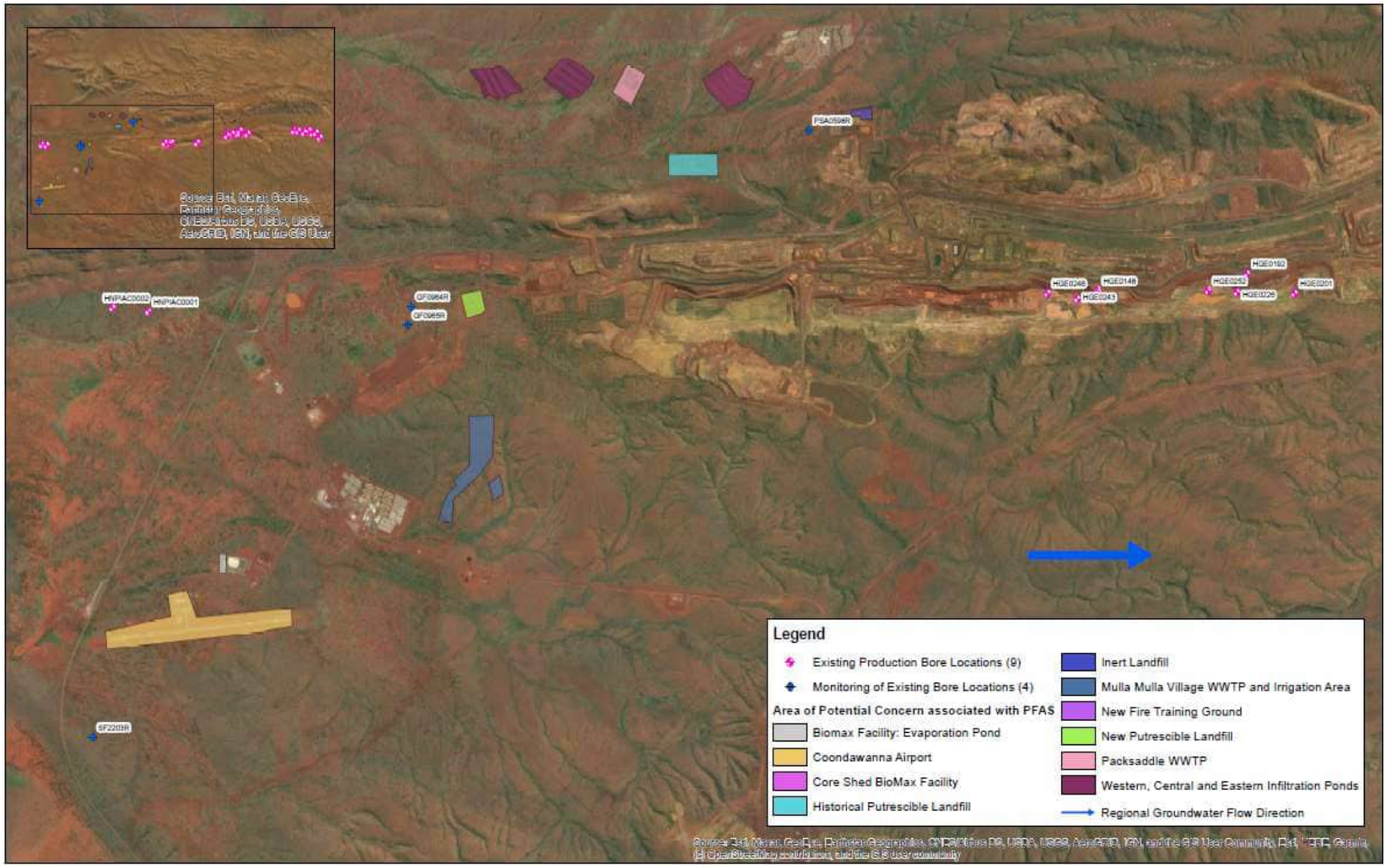
> HGSL0014P and HGSL0038P, bores within the MAR at Juna Downs; and

> HNPIAC0001P and HNPIAC0002P, potable water bores, locations displayed in Table 7-3.

Table 7-3 Area E Production Bores and Groundwater Monitoring Bores

Area E Production Bores and Groundwater Monitoring Bores

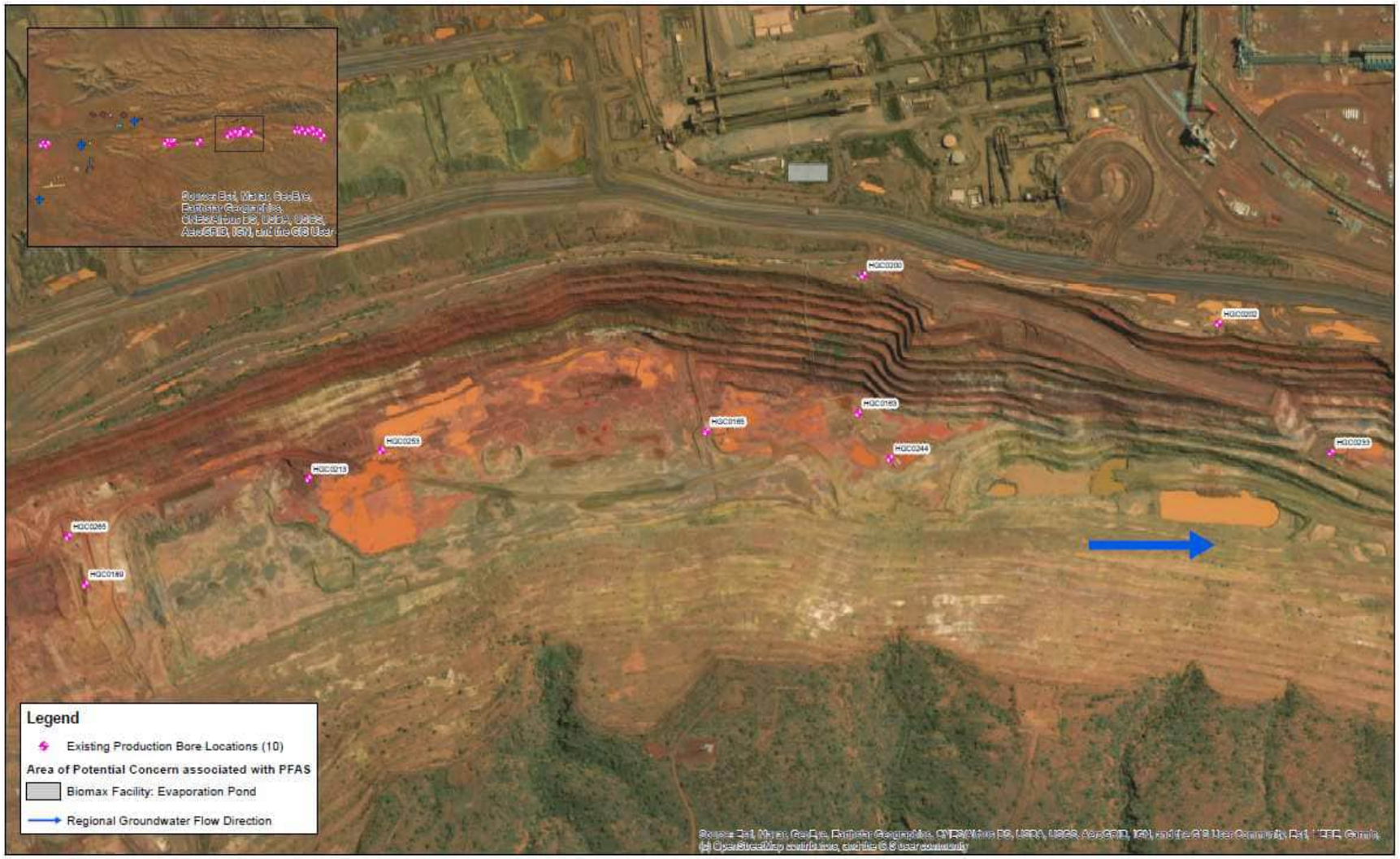
Bore ID	Details
HNPIAC0001P	▪ Located in Juna Downs ▪ Source of potable water
HNPIAC0002P	▪ Located in Juna Downs ▪ Source of potable water
HGE0148P	▪ Located in Area E, in the central portion of the Site ▪ The bore is not located in the vicinity of an identified AoPC
HGE0192P	▪ Located in Area E, in the central portion of the Site ▪ The bore is not located in the vicinity of an identified AoPC
HGE0201P	▪ Located in Area E, in the central portion of the Site ▪ The bore is not located in the vicinity of an identified AoPC
HGE0226P	▪ Located in Area E, in the central portion of the Site ▪ The bore is not located in the vicinity of an identified AoPC
HGE0243P	▪ Located in Area E, in the central portion of the Site ▪ The bore is not located in the vicinity of an identified AoPC
HGE0246P	▪ Located in Area E, in the central portion of the Site ▪ The bore is not located in the vicinity of an identified AoPC
HGE0252P	▪ Located in Area E, in the central portion of the Site ▪ The bore is not located in the vicinity of an identified AoPC
SF2203R	▪ Investigate the quality of groundwater migrating beneath the airport, bore considered to be located up-gradient
GF0964R GF0965R	▪ Investigate the quality of groundwater migrating beneath the putrescible landfill, bores considered to be located up-gradient
PSA0598R	▪ Bores area considered to be located up and down-gradient of new fire training ground and inert landfill



Sample Type	Sample Location	No. of Samples	Analysis
Groundwater	Monitoring Bore	4	PFAS Suite (Super Trace), pH, TDS, Acidity and Alkalinity; and major ions
	Production Bore	9	PFAS Suite (Super Trace), pH, TDS, Acidity and Alkalinity; and major ions

Table 7-4 Area C Production Bores

Area C	
Bore ID	Details
HGC0163P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 350 m to the northwest
HGC0165P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 375 m to the northeast
HGC0189P	▪ Located in Area C, in the central portion of the Site ▪ Closed AoPC to the bore is BioMax Facility AC-18 located approximately 1.0 km to the north
HGC0200P	▪ Located in the central area of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 150 m to the northwest
HGC0202P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 800 m to the west
HGC0213P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 800 m to the northeast
HGC0233P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 800 m to the northwest
HGC0244P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 450 m to the northwest
HGC0253P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-13, approximately 700 m to the northeast
HGC0265P	▪ Located in Area C, in the central portion of the Site ▪ Located cross-gradient of BioMax Facility AC-18, approximately 1.0 km m to the north



Sample Type	Sample Location	No. of Samples	Analysis
Groundwater	Monitoring Bore	-	-
	Production Bore	10	PFAS Suite (Super Trace), pH, TDS, Acidity and Alkalinity; and major ions

Table 7-5 Area A Production Bores

Area A	
Bore ID	**Details**
HGA0040P	▪ Bore located within the Area A at eastern extent of the Site down-gradient of all identified AoPC. ▪ Closed AoPC to the bore is AoPC 13, located approximately 2.0 km to the west
HGA0041P	▪ Bore located within the Area A at eastern extent of the Site down-gradient of all identified AoPC ▪ Closed AoPC to the bore is AoPC 13, located approximately 1.5 km to the west
HGA0062P	▪ Bore located within the Area A at eastern extent of the Site down-gradient of all identified AoPC ▪ Closed AoPC to the bore is AoPC 13, located approximately 1.75 km to the west
HGA0065P	▪ Bore located within the Area A at eastern extent of the Site down-gradient of all identified AoPC ▪ Closed AoPC to the bore is AoPC 13, located approximately 2.75 km to the southwest
HGA0070P	▪ Bore located within the Area A at eastern extent of the Site down-gradient of all identified AoPC. ▪ Closed AoPC to the bore is AoPC 13, located approximately 1.0 km to the west
HGA0074P	▪ Bore located within the Area A, down-gradient of all identified AoPC. ▪ Closed AoPC to the bore is AoPC 13, located approximately 175 m to the southwest
HGA0077P	▪ Bore located within the Area A, down-gradient of all identified AoPC. ▪ Closed AoPC to the bore is AoPC 13, located approximately 500 m to the west



Sample Type	Sample Location	No. of Samples	Analysis
Groundwater	Monitoring Bore	-	-
	Production Bore	7	PFAS Suite (Super Trace), pH, TDS, Acidity and Alkalinity; and major ions

7.3.3 Surface Water and Sediment Assessment

The deviations from the proposed surface water and sediment assessment within the SAQP are presented in Table 7-6.

Table 7-6 Deviations to Surface Water and Sediment Assessment

AoPC	BHP WAIO ID	Location	SAQP Sample ID	New Nomenclature	Comment
AoPC 2	Not allocated a contaminated site ID	Mulla Mulla Village WWTP and Irrigation Area	▪ SW001 ▪ SD001	N/A	Identified location was an emergency overflow pond and was empty at the time of the investigation.
			Sample locations not identified during the development of SAQP	ACCSSW0030 - ACCSSW0031	Two surface water samples collected within Sprayfields, one sample collected directly from a sprinkler (ACCSSW0030) and one sample collected from a pool (ACCSSW0031)
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds	▪ SW007 and SW008 ▪ SW013 to SW015	N/A	Unable to collect surface water sample, Eastern Infiltration pond not in use during the investigation, resulting in ephemeral creek being dry.
AoPC 10	AC-09	HV Workshop	SD018 to SD020	N/A	Unable to lift grates adjacent to the workshop entrances to collect sediment samples
AoPC 13	AC13, AC18, AC19, AC23, AC24 and AC25	BioMax Facilities	SW024 to SW029	N/A	Unable to collect TWW sample from Biomax facility.

7.3.4 Deviation Summary

Given the nature of this investigation, it is considered that the reported changes to the SAQP have not materially impacted the assessment, or the conclusions that can be drawn from the assessment.

7.4 Summary of Sampling Design

The sampling design for the assessment aimed to characterise the presence of PFAS:

> At the contaminant sources (e.g. soil, sediment, surface water and groundwater testing within identified source areas);

> Within potential contaminant transport pathways (e.g. surface water sampling in creeks, plus sampling of groundwater across the Site); and

> At potential contaminant receptors (e.g. Juna Downs MAR bores).

These sources, pathways and receptors were identified in the CSM developed, and refined as necessary throughout the investigation.

The assessment aimed to resolve data gaps which were identified following the site inspection with respect to the characterisation of the sources, pathways and receptors. These data gaps are described as a series of study questions within the DQOs in Section 6.

The sampling design presented in Table 7-7 is a consolidation of the fieldwork undertaken. The basis of the consolidated sampling design was the characterisation of PFAS at the various sources, pathways and receptors identified incorporating the work undertaken in response to the identified data gaps and uncertainties. Table 7-7 also demonstrates how each of the study questions presented in the DQOs were resolved.

Table 7-7 Assessment Design

AoPC	BHP WAIO ID	Identification	Scope	Analysis	DQO Study Question Being Resolved
Non-targeted Sampling					
-	-	Background	▪ Collection of two groundwater samples from existing potable water production bores HNPIAC0001P and HNPIAC0002P.	Primary Groundwater Samples ▪ Two samples - PFAS Super Trace ▪ Two samples - Major anions and cations	▪ What is the background PFAS concentrations within the vicinity of the Site and do they differ from levels present on-Site?
Source Characterisation					
AoPC 1	AC-16	Coondawanna Airport	▪ Collection of 16 surface soil samples (ACCSSS0001 - ACCSSS0016) around airport apron. ▪ Gauging and sampling of one groundwater monitoring bore installed by others (SF2203R)	Primary Surface Soil Samples ▪ 16 samples - PFAS ▪ 16 samples – Deionised water leachate ▪ 16 samples - PFAS Super Trace ▪ Two samples - pH, Cation Exchange Capacity (CEC), Clay Content Primary Groundwater Samples ▪ One sample - PFAS Super Trace (28 Analytes) ▪ One sample - Major anions and cations	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses? ▪ What is the background PFAS concentrations within the vicinity of the Site and do they differ from levels present on-Site? ▪ What is the current condition and quality of groundwater and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion, potable use) or the environment (vegetation and terrestrial wildlife)?
AoPC 2	Not allocated a contaminated site ID	Mulla Mulla Village WWTP and Irrigation Area	▪ Collection of 23 surface soil samples (ACCSSS0017 - ACCSSS0039) across the treated wastewater sprayfields. ▪ Collection of three surface water samples (ACCSSW0001, ACCSSW0030 and ACCSSW0031)	Primary Surface Soil Samples ▪ 23 samples - PFAS ▪ 23 samples – Deionised water leachate ▪ 23 samples - PFAS Super Trace ▪ Three samples - pH, Cation Exchange Capacity (CEC), Clay Content Primary Surface water Samples ▪ Three samples PFAS Super Trace	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses?
AoPC 3	Not allocated a contaminated site ID	New Putrescible Landfill	▪ Collection of four surface soil samples (ACCSSS0040 - ACCSSS0043) in the vicinity of the airport apron. ▪ Gauging and sampling of two groundwater monitoring bores installed by others (GF0964R and GF0965R)	Primary Soil Samples ▪ Four samples - PFAS ▪ Four samples – Deionised water leachate ▪ Four samples - PFAS Super Trace Primary Groundwater Samples ▪ Two samples - PFAS Super Trace ▪ Two samples - Major anions and cations	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses? ▪ What is the current condition and quality of groundwater and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion, potable use) or the environment (vegetation and terrestrial wildlife)?
AoPC 5	AC-12	Packsaddle WWTP	▪ Collection of three surface water samples (ACCSSW0016 - ACCSSW0018) from infiltration ponds and ephemeral creeks. ▪ Collection of three sediment samples (ACCSSD0015 - ACCSSD0017) from infiltration ponds and ephemeral creeks.	Primary Surface water Samples ▪ Three samples PFAS Super Trace Primary Sediment Samples ▪ Three samples - PFAS (28 Analytes) ▪ Three samples – Deionised water leachate ▪ Three samples - PFAS Super Trace	▪ What is the potential of the applicable AoPC to influence quality of surface water and sediment (within creeks, drainage lines and areas of standing water)? ▪ Is there a demonstrated pathway for CoPC migration, and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion) or the environment (aquatic ecosystems, native avian and terrestrial wildlife)?
AoPC 6	AC-05	Historical Putrescible Landfill	No Samples were collected from the vicinity of the historical landfill. The landfill itself was locked at the time of the assessment, and was unable to be sampled, groundwater monitoring bores up and down gradient of the AoPC dry or had a data logger with telemetry system installed.		
AoPC 7	Not allocated a contaminated site ID	New Firefighting Training Ground	▪ Collection of nine surface soil samples (ACCSSS0048 - ACCSSS0056) across the AoPC. ▪ Gauging and sampling of one groundwater monitoring bore installed by others (PSA0598R)	Primary Surface Soil Samples ▪ Nine samples - PFAS ▪ Nine samples – Deionised water leachate ▪ Nine samples - PFAS Super Trace Primary Groundwater Samples ▪ One sample - PFAS Super Trace ▪ One sample - Major anions and cations	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses? ▪ What is the current condition and quality of groundwater and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion, potable use) or the environment (vegetation and terrestrial wildlife)?

AoPC	BHP WAIO ID	Identification	Scope	Analysis	DQO Study Question Being Resolved
AoPC 8	Not allocated a contaminated site ID	Inert Landfill	▪ Collection of two surface soil samples (ACCSSS0057 - ACCSSS0058) across the AoPC.	Primary Surface Soil Samples ▪ Two samples - PFAS ▪ Two samples – Deionised water leachate ▪ Two samples - PFAS Super Trace	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses?
AoPC 9	AC-22	MAC Medical Centre (emergency vehicle washdown area)	▪ Collection of eight surface soil samples (ACCSSS0059 - ACCSSS0066) across the AoPC.	Primary Surface Soil Samples ▪ Eight samples - PFAS ▪ Eight samples – Deionised water leachate ▪ Eight samples - PFAS Super Trace	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses?
AoPC 10	AC-09	Heavy Vehicle Workshops	▪ Collection of 16 surface soil samples (ACCSSS0067 - ACCSSS0082) across the AoPC. ▪ Collection of two surface water samples (ACCSSW0019 and ACCSSW0020) from evaporation ponds. ▪ Collection of two sediment samples (ACCSSD0021 - ACCSSD0022) from evaporation ponds.	Primary Surface Soil Samples ▪ 16 samples - PFAS ▪ 16 samples – Deionised water leachate ▪ 16 samples - PFAS Super Trace ▪ Two samples - pH, Cation Exchange Capacity (CEC), Clay Content Primary Surface water Samples ▪ Two samples PFAS Super Trace Primary Sediment Samples ▪ Three samples - PFAS ▪ Three samples – Deionised water leachate ▪ Three samples - PFAS Super Trace	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses? ▪ What is the potential of the applicable AoPC to influence quality of surface water and sediment (within creeks, drainage lines and areas of standing water)?
AoPC 11	AC-10 and AC-11	New and Old Washdown Bays and Evaporation Ponds	▪ Collection of four surface soil samples (ACCSSS0083 - ACCSSS0086) across the AoPC. ▪ Collection of two surface water samples (ACCSSW0021 and ACCSSW0022) from evaporation ponds. ▪ Collection of two sediment samples (ACCSSD0023 - ACCSSD0024) from evaporation ponds.	Primary Surface Soil Samples ▪ 16 samples - PFAS ▪ 16 samples – Deionised water leachate ▪ 16 samples - PFAS Super Trace Primary Surface water Samples ▪ Two samples PFAS Super Trace Primary Sediment Samples ▪ Two samples - PFAS ▪ Two samples – Deionised water leachate ▪ Two samples - PFAS Super Trace	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses? ▪ What is the potential of the applicable AoPC to influence quality of surface water and sediment (within creeks, drainage lines and areas of standing water)?
AoPC 12	AC-03	Bioremediation Farm	▪ Collection of one surface water sample (ACCSSW0023) from the wet cell. ▪ Collection of one sediment sample (ACCSSD0025) from the dry cell.	Primary Surface water Samples ▪ One sample PFAS Super Trace Primary Sediment Samples ▪ One sample - PFAS ▪ One sample – Deionised water leachate ▪ One sample - PFAS Super Trace	▪ What is the potential of the applicable AoPC to influence quality of surface water and sediment (within creeks, drainage lines and areas of standing water)?
AoPC 13	AC18 Core Shed, Storage Area and Workshop BioMax Facilities have not been allocated a contaminated site ID	BioMax facilities and irrigation areas	▪ Collection of 16 surface soil samples (ACCSSS0099 - ACCSSS0122) across the AoPC. A total of four samples were collected from across four individual BioMax Facilities.	Primary Surface Soil Samples ▪ 16 samples - PFAS ▪ 16 samples – Deionised water leachate ▪ 16 samples - PFAS Super Trace	▪ What is the current condition and quality of near surface soils, at applicable AoPCs, and does it present an unacceptable risk to current and future site users or the environment (vegetation and terrestrial wildlife)? ▪ What is the need for remediation and/or ongoing management of residual impact for the Site to be suitable for the current uses?
Pathway Characterisation					
-	-	Groundwater	▪ Collection of 24 groundwater samples from existing production bores. The productions bores were located across the Site and considered to represent general groundwater conditions.	Primary Groundwater Samples ▪ 24 samples PFAS Super Trace	▪ What is the current condition and quality of groundwater and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion, potable use) or the environment (vegetation and terrestrial wildlife)? ▪ Is PFAS impacted groundwater migrating off-site?

AoPC	BHP WAIO ID	Identification	Scope	Analysis	DQO Study Question Being Resolved
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds	▪ Collection of four surface water samples (ACCSSW0009 - ACCSSW0012) from infiltration ponds. ▪ Collection of six sediment samples (ACCSSD0008 - ACCSSD0013) from infiltration ponds.	Primary Surface water Samples ▪ Four samples PFAS Super Trace Primary Sediment Samples ▪ Six samples - PFAS ▪ Six samples – Deionised water leachate ▪ Six samples - PFAS Super Trace	▪ What is the potential of the applicable AoPC to influence quality of surface water and sediment (within creeks, drainage lines and areas of standing water)? ▪ Is there a demonstrated pathway for CoPC migration, and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion) or the environment (aquatic ecosystems, native avian and terrestrial wildlife)?
Receptor Characterisation					
-	-	Groundwater	▪ Collection of two groundwater samples from aquifer recharge bores located in Juna Downs HGSL0014P and HGSL0038P.	Primary Groundwater Samples ▪ Two samples - PFAS Super Trace ▪ Two samples - Major anions and cations	▪ What is the current condition and quality of groundwater and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion, potable use) or the environment (vegetation and terrestrial wildlife)? ▪ Is PFAS impacted groundwater being discharged via the Juna Downs MAR and Packsaddle Infiltration Ponds?
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds	▪ Collection of four surface water samples (ACCSSW0003 - ACCSSW0006) from ephemeral creeks. ▪ Collection of seven sediment samples (ACCSSD0002 - ACCSSD0007, and ACCSSD0007) from ephemeral creeks.	Primary Surface water Samples ▪ Four samples PFAS Super Trace Primary Sediment Samples ▪ Seven samples - PFAS ▪ Seven samples – Deionised water leachate ▪ Seven samples - PFAS Super Trace	▪ What is the potential of the applicable AoPC to influence quality of surface water and sediment (within creeks, drainage lines and areas of standing water)? ▪ Is there a demonstrated pathway for CoPC migration, and does it present an unacceptable risk for current and future site users (direct contract, incidental ingestion) or the environment (aquatic ecosystems, native avian and terrestrial wildlife)?

7.5 Methodology

All field methodology was detailed in the SAQP (Cardno, 2021). Table 7-8 presents a consolidation of the methodologies adopted for sampling throughout the investigation. Field assessment records are presented in Appendix H, with Field quality control (QC) and quality assurance (QA) procedures are described in Appendix I.

7.5.1 PFAS Sampling

As described in the PFAS NEMP (2020), the following handling and processing practices were followed when sampling:

- Where possible, sample from areas of likely low concentrations of PFAS first towards likely higher concentrations;
- Use a new pair of powderless, disposable nitrile gloves for every sample collected;
- Teflon coated materials and aluminium foil not to come into contact with the sample; and
- During sample processing and storage, minimise the exposure of the sample to light by placing immediately into an esky.

Ice-bricks, including chemical or gel-based coolant products were not used to maintain samples below 4°C. Ice in sealable polyethylene bags was utilised.

Table 7-8 Assessment Methodology

Task	Methodology
Surface Soil Sampling	Soil samples were collected using a stainless-steel hand trowel, with soil samples collected at each location from near surface (0 – 0.15 m). Samples were collected from the near surface soils, noting excavation of soils below 150 mm is restricted without obtaining an excavation permit. During the fieldwork assessment ground truthing was undertaken at the start of the sampling program of each AoPC, with sampling locations positioned within visible drainage channels, if present. All soil samples were visually inspected, with field observations and subsurface conditions recorded on field lithological logs, including statements on nature and presence of fill materials.
Groundwater Level Gauging	All available groundwater monitoring bores (did not have a data logger with telemetry system installed) were gauged to determine standing water levels using an interface probe. Depth measurements were referenced to the top of well casing. Where possible, depth measurements were recorded to the nearest 1.0 cm.
Groundwater Monitoring Bore Sampling	Disposable non-Teflon HydraSleeves® fitted with polypropylene string were used to collect all groundwater samples. HydraSleeves were deployed with bottom weight to allow the sample to be collected at the lowest point. HydraSleeve sampling devices were left in bores for a minimum of 24 hours, to allow stabilisation, 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 value into the sample sleeve. Samples were discharged immediately (minimise changes in chemistry) via discharge tube. Prior to sample collection, field parameters including temperature, pH, electrical conductivity (EC), dissolved oxygen (DO) and oxidation reduction potential (ORP), were measured during purging using a pre-calibrated water quality meter and recorded on tablets. The water quality meter calibration certificate is provided in Appendix H.
Production Bore Sampling	The tap associated with each production bore was allowed to purge for two minutes prior to the sampling being collected. Samples were collected directly into sample containers. Prior to sample collection, field parameters including temperature, pH, EC, DO and ORP, were measured during purging using a pre-calibrated water quality meter and recorded on tablets. The water quality meter calibration certificate is provided in Appendix H.
Surface Water Sampling	Where the embankment of the water body was stable and the water body could be safely accessed, surface water samples were collected by hand, directly into the laboratory supplied sample containers. Where depth permitted, the sample container was positioned least 0.1 m below the surface water level and above the sediment bed and oriented with the capped opening facing downwards to avoid the collection of surface films. Once in position, the container cap was removed to allow sample collection. Where sampling points could not be safely accessed, surface water samples were collected using a long-handled sampler and decanted into the laboratory supplied sample containers. Field parameters including temperature, pH, EC, DO and ORP were measured at the time of sampling using a pre-calibrated water quality meter and were recorded on field sampling sheets. The water quality meter calibration certificates are provided in Appendix H.
Sediment Sampling	Where embankment stability and surface water depth permitted, sediment samples were collected using a stainless-steel trowel. At each sampling location, the sediment type was visually assessed and observations were recorded on field sampling sheets.

7.6 Laboratory Analysis

7.6.1 Laboratories

The laboratories used for analysis during the assessment are National Association of Testing Authorities (NATA) accredited for the specific analytical procedures. These included:

> Primary laboratory: ALS Environmental, Wangara, Western Australia; and

> Secondary laboratory: Eurofins, Welshpool, Western Australia.

7.6.2 Analytical Methods

The analytical methods adopted by the primary and secondary laboratory for the assessment are summarised in Table 7-9.

Table 7-9 Laboratory Methods

Item	Details
Sample Handling	Upon receipt of a batch of samples, the chain-of-custody (CoC) form was signed and dated by the laboratory. A hard copy of the CoC was filed and stored and an electronic copy was filed under a unique work order number. A copy of the signed CoC was emailed to Cardno along with the sample receipt notification. The temperature of the samples was recorded at receipt, along with a description of the chilling method (e.g. ice) and condition of insulated container (i.e. security seals intact). Bench space was allocated per work order so samples cannot be mixed with other work orders. The work order was logged and unique, water-proof labels were produced and adhered to each sample container. Samples were organised by sample type and/or preservative and were stored below 6 ºC until analysed. The laboratories follow Good Laboratory Practice including the maintenance of clean equipment and instrumentation to minimise the potential for cross-contamination of samples.
PFAS	ISO 25101:2009 method was used for analysis of PFAS in soil, sediment and water samples. This method uses a mixed standard of linear and branched PFOS isomers. The ‘sum of PFAS’ reported includes all compounds of the suite tested for. Linear and branched PFOS can be reported separately if requested however, this was not routinely completed for this investigation as there is currently insufficient human health or ecological toxicology data on the separate isomers and the investigation levels are also not based on separate isomers.

7.7 Waste Management

During the investigation, strict waste management protocols were followed to ensure that potentially impacted soil and water did not result in cross-contamination of non-impacted areas of the Site. However, the sampling methodology (HydraSleeves and surface soil samples) allowed the generation of purge water and spoil to be kept to a minimum with all spoil generated from soil sampling returned to the sub-surface following completion of sampling.

8 Assessment Criteria

8.1 Adopted Assessment Criteria

Criteria for PFAS are adopted from the PFAS National Environment Management Plan released by the Heads of Environmental Protection Agencies in Australia and New Zealand. Version 2.0 (HEPA 2020) in January 2020.

The PFAS National Environmental Management Plan (NEMP) provides nationally agreed guidance on the management of PFAS contamination in the environment, including prevention of the spread of contamination. It supports collaborative action on PFAS by the Commonwealth, state and territory and local governments around Australia. The NEMP is an Appendix to the Intergovernmental Agreement on a National Framework Responding to PFAS Contamination.

The identification of PFAS above relevant guideline values acts as a trigger to undertake further investigations (such as site-specific risk assessment, as opposed to the assumption that harm will have occurred). The guideline values can also prompt consideration of management action to meet the environmental values and mitigate, where practicable, human health and ecological risks.

8.2 Groundwater and Surface Water

8.2.1 Human Health

For humans, the main sources of PFAS are via ingestion of food and drinking water. Health authorities have set health-based guidance values indicating the amount of a chemical intake a person can consume on a regular basis over a lifetime without any significant risk to health. The health-based guidance values for PFOS and PFOA were recommended by Food Standards Australia and New Zealand in the form of a tolerable daily intake (TDI) (FSANZ, 2017). The TDI was then used to calculate the human health-based assessment criteria.

The adopted human health assessment criteria for groundwater and surface water is shown in Table 8-1.

Table 8-1 Human Health Groundwater and Surface Water Assessment Criteria

Beneficial Use	HEPA (2020) Criteria	Table	PFOS (µg/L)	PFOS + PFHxS (µg/L)	PFOA (µg/L)
Drinking Water	HBGV for Drinking Water	1	Refer to value for PFOS + PFHxS	0.07	0.56
Recreational Water	HBGV for Recreational Water	1		2	10

Notes:

HEPA = Heads of Environmental Protection Authorities in Australia and New Zealand, HBGV = Health based Guidance Value

1. The HBGV for drinking water are adopted for livestock due to the lack of available stock water criteria for PFAS
2. Adopting the drinking water criterion for livestock does not account for residue levels in meat or human consumption of meat which should be considered separately

8.2.1 Environment

The water quality guideline framework[1] recommends that for bio accumulative contaminants, which includes many PFAS, the Water Quality Guideline framework specifies that the 99% species protection DGV should be used for:

- Assessing toxicity and bioaccumulation in high conservation value ecosystems; and
- Assessing bioaccumulation in slightly to moderately disturbed ecosystems.

The adopted ecological assessment criteria for groundwater and surface water is shown in Table 8-2.

[1] https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/local-conditions#bioaccumulation.

Table 8-2 Ecological Groundwater and Surface Water Assessment Criteria

Beneficial Use	HEPA (2020) Criteria	Table	PFOS (µg/L)	PFOS + PFHxS (µg/L)	PFOA (µg/L)
Aquatic Ecosystems	Freshwater Guideline Value (99%)	5	0.00023	no value	19

8.3 Soil and Sediment

8.3.1 Human Health

The human health-based assessment criteria for soil were derived using a methodology consistent with assumptions set out in the ASC NEPM for the health investigation levels (HILs). The following assessment criteria have been adopted based on current and future exposure pathways:

- Residential with garden/accessible soil - Assumes home-grown produce provides up to 10% of fruit and vegetable intake (does not account for consumption of any eggs from home poultry, nor of milk or meat from stock on the premises). Also includes children's day care centres, preschools and primary schools;
- Residential with minimal opportunities for soil access - Assumes no potential use of soil for consumption of home-grown produce. Includes dwellings with fully and permanently paved yard space such as high rise-buildings and flats; and
- Public open space - Relevant for public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools (except for soil used for agricultural studies) and footpaths. Excludes undeveloped public open space (such as urban bushland and reserves), which should be subject to a site-specific assessment where appropriate.

The adopted human health assessment criteria for soil and sediment is shown in Table 8-3.

Table 8-3 Human Health Soil and Sediment Assessment Criteria

HEPA (2020) Criteria	Table	PFOS (mg/kg)	PFOS + PFHxS (mg/kg)	PFOA (mg/kg)
Residential with garden/accessible soil	2	Refer to value for PFOS + PFHxS	0.01	0.1
Residential with minimal opportunities for soil access	2		2	20
Public open space	2		1	10

8.3.2 Environment

It is noted that the ecological assessment criteria are currently interim. The direct exposure ecological soil criteria apply specifically to protection of organisms that live within, or in close contact with soil, such as earthworms and plants. This direct exposure value can be used to assess the possibility of direct harm to these organisms. In the absence of acceptable and sufficient published guideline values for direct exposure, human health soil criteria are recommended as an interim position.

The adopted ecological assessment criteria for soil and sediment is shown in Table 8-4.

Table 8-4 Ecological Soil and Sediment Assessment Criteria

HEPA (2020) Criteria	Table	PFOS (mg/kg)	PFOS + PFHxS (mg/kg)	PFOA (mg/kg)
Ecological direct exposure	3	1	No value	10
Ecological indirect exposure	3	0.14	No value	No value

The ecological indirect exposure guideline value is based on dietary exposure of a secondary consumer as the most sensitive exposure pathway assessed. The value of 0.14 mg/kg has been based on an intensively developed site with no secondary consumers and minimal potential for indirect ecological exposure.

9 Quality Assurance / Quality Control

The quality assurance/quality control (QA/QC) procedures adopted for the investigation are based on the DER (2014) contaminated sites guidelines, Australian Standards *AS 5667 – 1998* (Standards Australia 1998) and the *ASC NEPM* (NEPC 2013).

QA involves all of the actions, procedures, checks and decisions, undertaken to ensure the representativeness and integrity of samples and accuracy and reliability of analytical results. QC involves protocols to monitor and measure the effectiveness of QA procedures.

In accordance with the *ASC NEPM*, the reliability of field procedures and analytical results have been assessed using DQIs of precision, accuracy, representativeness, completeness and comparability. These are summarised below:

- Representativeness is the confidence that the data are representative of each medium analysed.
- Comparability is the confidence that the data may be considered to be equivalent for each sampling event and analytical event.
- Precision is a quantitative measure of the variability (or reproducibility) of data.
- Accuracy/bias is a quantitative measure of the closeness of reported data to the true value.
- Completeness is a measure of the amount of useable data from a data collection activity.

The findings of the investigation QA/QC assessment are detailed in Appendix I. In summary, based upon a review of the field and laboratory QA/QC procedures adopted for the investigation, the field and laboratory data is considered to be of sufficient integrity and can be used with confidence.

10 Field Results

10.1 Surface Soil Geology

The surface geology across each AoPC was predominantly consistent, noting that samples were collected at a maximum depth of 0.15 m BGL. The surface geology across the Site predominantly consisted of red/brown slightly silty gravelly clay. Due to the nature of the samples taken, individual bore logs have not been developed, a description of the encountered geology during the surface soil sampling program is presented in Appendix J.

10.2 Hydrogeology

10.2.1 Groundwater Elevations – Groundwater Monitoring Bores

During the investigation only four groundwater monitoring bores (GF0964R, GF0965R, PSA0598R and SF2203R) were able to be gauged due to the presence of telemetry data loggers:

Details of standing water levels (SWL) and bore construction details (provided in the BHP WAIO data base) is presented in Table 10-1.

Table 10-1 Groundwater Elevations – Groundwater Monitoring Bores

Bore ID	Date Gauged	Surface Elevation*	Hole Depth (m BGL)	Depth to top of Screen*	Depth to top of Screen*	SWL (m BGL)	Groundwater elevation (m AHD)
GF0964R	21/08/2021	700.275	49.246	40	49	37.457	662.82
GF0965R	21/08/2021	699.683	74.687	48	72	36.869	662.814
PSA0598R	21/08/2021	778.319	167.024	119	167	121.345	656.974
SF2203R	21/08/2021	709.274	87.484	43	85	42.264	667.01

Notes

* Information provided within BHP WAIO bore data base

The SWL within the production bores was not possible to be gauged based on the infrastructure associated with the bore.

10.2.2 Physiochemical Parameters

Field observations and physiochemical parameters recorded during the groundwater monitoring event are provided in Appendix H. A summary is presented below:

- Temperature displayed some variation across the Site, 21.7 – 31.1 °C;
- DO ranged between 72.6 mg/L to 1,334 mg/L in bores;
- TDS concentrations ranged from 344.5 mg/L to 500.5 mg/L indicating fresh conditions;
- Field pH ranged between 7.08 and 7.98 which is considered ‘near neutral’; and
- ORP data indicated both negative and positive potentials in all bores across the Site from 5.6 mV to 2,545.9 mV.

Average concentrations for groundwater monitoring, production and recharge bores for the event is presented in Table 10-2.

Table 10-2 Average Physiochemical Parameters

Bore Type / Number	Temp (C°)	DO (mg/L)	EC (us/Cm)	TDS	pH	Eh (mV)
Groundwater / Four bores	25.85	44.3	634.25	412.75	7.35	107.85
Production / 26 Bores (including Potable Bore)	28.8	40..3	674.17	454	7.45	74.98
Recharge / two Bores	23.25	57.95	689.5	448.5	7.92	82.45

10.3 Surface Water

A total of 19 surface water samples were collected from across the Site from open (infiltration ponds) and enclosed systems (evaporation ponds and wet bioremediation cell).

10.3.1 Physiochemical Parameters

Field observations and physiochemical parameters recorded during the surface monitoring event are provided in Appendix H. A summary is presented below, noting that physical parameters were not recorded for samples collect from Mulla Mulla WWTP:

- Temperature displayed some variation across the Site, 16 – 27.1 °C;
- DO was generally low to moderate, ranging between 0.3 mg/L to 301.1 mg/L in bores;
- TDS concentrations ranged from 429 mg/L to 3,563.5 mg/L indicating fresh to brackish conditions;
- Field pH ranged between 7.91 and 10.05 which is considered 'near neutral' to alkaline conditions; and
- ORP data indicated both negative and positive potentials in all bores across the Site from -222.3 mV to 71.6 mV.

10.4 Sediment

A total of 21 sediment samples were collected across the Site, Table 10-3 provides a description of the encountered geology during the sediment sampling program.

Table 10-3 Sediment Geology

AoPC	BHP WAIO ID	Sample ID	Description
AoPC 4 Infiltration Ponds and Creeks	Not allocated a contaminated site ID	ACCSSD0002	Red / brown, gravelly clay, gravel fine, wet
		ACCSSD0003	Red / brown, gravelly clay, gravel fine, wet
		ACCSSD0004	Red / brown, gravelly clay, gravel fine, wet
		ACCSSD0005	Red / brown, gravelly silt, gravel fine, wet
		ACCSSD0006	Red / brown, gravelly silty clay, gravel fine, dry
		ACCSSD0007	Red / brown, gravelly silty clay, gravel fine, dry
		ACCSSD0008	Red / brown, gravelly silty clay, gravel fine, dry
		ACCSSD0009	Red / brown, gravelly clay, gravel fine, wet
		ACCSSD0010	Red / brown, gravelly clay, gravel fine, wet
		ACCSSD0011	Red / brown, gravelly silty clay, gravel fine, dry
		ACCSSD0012	Red / brown, gravelly silty clay, gravel fine, dry
		ACCSSD0013	Red / brown, gravelly silty clay, gravel fine, dry
		ACCSSD0014	Red / brown, gravelly silty clay, gravel fine, dry
AoPC 5 Packsaddle WWTP	Not allocated a contaminated site ID	ACCSSD0015	Red / brown, clayey sand, wet
		ACCSSD0016	Red / brown, clayey sand, wet
		ACCSSD0017	Black, silty, organic
AoPC 10 HV Workshop Evaporation Pond	AC-09	ACCSSD0021	Dark brown, silt, sulphur odour, wet
		ACCSSD0022	Dark brown, silt, sulphur odour, wet
AoPC 11 Washdown Bay Evaporation Ponds	AC-10 and AC-11	ACCSSD0023	Dark brown, silt, sulphur odour, wet
		ACCSSD0024	Dark brown, silt, sulphur odour, wet
AoPC 12 Dry Cell	AC-03	ACCSSD0025	Red / brown, gravelly silty, gravel fine, dry

11 Analytical Results and Discussion

Analytical results are presented Table 1 to Table 7 in Appendix B. The laboratory reports, sample receipt notifications (SRNs) and CoC documentation are presented in Appendix K.

11.1 Surface Soil Characteristics

A total of nine soil characteristic samples were collected from across the Site and analysed for physical properties including cation exchange capacity (CEC), clay content, EC, pH, soil particle density (SPD) and total organic carbon (TOC).

- AoPC 1 (AC-16) - Coondawanna Airport;
- AoPC 2 (No BHP ID) - Mulla Mulla Village WWTP and Irrigation Area;
- AoPC 10 (AC-09) - Heavy Vehicle Workshop;
- AoPC 13 (No BHP ID) - Core Shed BioMax Facility; and
- AoPC 13 (No BHP ID) - Workshop BioMax Facility.

A summary of the results is presented in Table 11-1.

Table 11-1 Summary of Soil Characteristics

Analyte	No. of samples	Minimum	Maximum	Average
CEC (meq/100g)	9	0.3	17.3	8.12
Clay content (%)	9	6.0	15	10.78
EC (µS/cm)	9	65	3,170	937
Moisture content	98	0.1	44.7	7.3
pH	98	5.0	9.8	7.5
SPD (g/cm^3)	9	3.0	3.7	3.2
TOC (%)	9	<0.5	1.6	1.03

- CEC was highest within a sample from the airport (a maximum of 17.3 meq/100g and an average of 8.12 meq/100g). There was no discernible link between CEC and PFAS concentrations with the sample recording the highest CEC recording a sum of PFAS concentration of 0.0125 mg/kg, and the second highest CEC (16.2 meq/100g) recording a sum of PFAS concentration of 0.0012 mg/kg;
- The recorded clay content across the samples collected was relatively consistent, with a minimum concentration of 6% recorded in a sample from the HV workshop, and the highest concentrations recorded in samples from the Mulla Mulla village sprayfields (15%). The clay content of the samples indicates there is limited potential for vertical migration of PFAS from the surface to the deeper soil profile and underlying aquifer;
- EC concentrations ranged from 65 to 3,170 µS/cm, with the highest and lowest concentrations recorded within the sprayfields of Mulla Mulla Village WWTP;
- pH across the AoPC ranged from 5.0 to 9.8, slightly acidic to slightly alkaline. pH was analysed in all samples collected; and
- TOC was highest at the HV workshop (a maximum of 1.6% and an average 1.03%) which is consistent with the observed landscaping in the area (i.e. little vegetation).

It is considered that low TOC, CEC and pH values across the Site suggest a limited potential for PFAS mobility to be reduced through binding to the soils in these areas.

11.2 Analytical Results – Areas of Potential Concern

The analytical results for each AoPC are displayed in Table 11-2 to Table 11-21. The tables display the surface soil, surface water and sediment, including leachate results, for each AoPC. The tables display minimum, maximum and median concentrations of PFOA, PFOS; and sum of PFHxS and PFOS presenting PFAS compounds for which there are currently assessment criteria, with sum of PFAS also included to indicate the concentrations of the remaining PFAS compounds.

Table 11-2 AoPC 1 Coondawanna Airport – Summary of PFAS Analysis

AoPC 1 (AC-16) - Coondawanna Airport

Surface Soil

- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

Perfluorohexanoic acid (PFHxA)	Perfluorododecanoic acid (PFDoDA)
Perfluoroheptanoic acid (PFHpA)	Perfluorotridecanoic acid (PFTrDA)
Perfluorononanoic acid (PFNA)	6:2 Fluorotelomer Sulfonate (6:2 FTS)
Perfluorodecanoic acid (PFDA)	8:2 Fluorotelomer sulfonate (8:2 FTS)
Perfluoroundecanoic acid (PFUnDA)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)

- The highest sum of PFAS concentrations were recorded in the vicinity of Bay 2, where it is reported fire training exercises utilising AFFF have been conducted.
- Sum of PFAS concentrations in the surface soils predominantly belonged to the Fluorotelomer Sulfonic Acids group, specifically 6:2 FTS. These compounds are precursor products to the Perfluoroalkyl Carboxylic Acids group, which have been detected at sites where AFFF has been used.

Leachate

- PFOA concentrations were recorded above the laboratory LOR in 14 of the 16 analysed, but below the adopted human health and ecological assessment criteria.
- All samples, with the exception of ACCSSS0016, located to the northwest of the apron, recorded a PFOS concentration above the 99% freshwater criteria.
- Perfluoroalkyl Sulfonic Acids compounds were noted in samples above the laboratory LOR that were not detected within the soil samples
- PFAS compounds that reported the highest concentrations across the area belonged to the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups, specifically (maximum concentrations recorded):
  - PFPeA – 0.156 µg/L;
  - PFHxA – 0.136 µg/L; and
  - 6:2 FTS – 16.4 µg/L.



Sample Type	No. of samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	16	PFOA	<0.0002	0.0048	0.0002	0	0
	16	PFOS	<0.0002	0.0003	0.0002	-	0
	16	PFOS + PFHxS	<0.0002	0.0003	0.0002	0	-
	16	Sum of PFAS	<0.0002	0.334	0.0026	-	-
Leachate (µg/L)	16	PFOA	<0.0005	0.224	0.0034	0	0
	16	PFOS	<0.0002	0.0115	0.002	-	15
	16	PFOS + PFHxS	<0.0002	0.0115	0.0033	0	-
	16	Sum of PFAS	0.0018	17	0.0985	-	-

Table 11-3 AoPC 2 Mulla Mulla Village WWTP Sprayfield 1 – Summary of PFAS Analysis

AoPC 2 (No BHP ID) - Mulla Mulla Village WWTP Sprayfield 1

Surface Soil

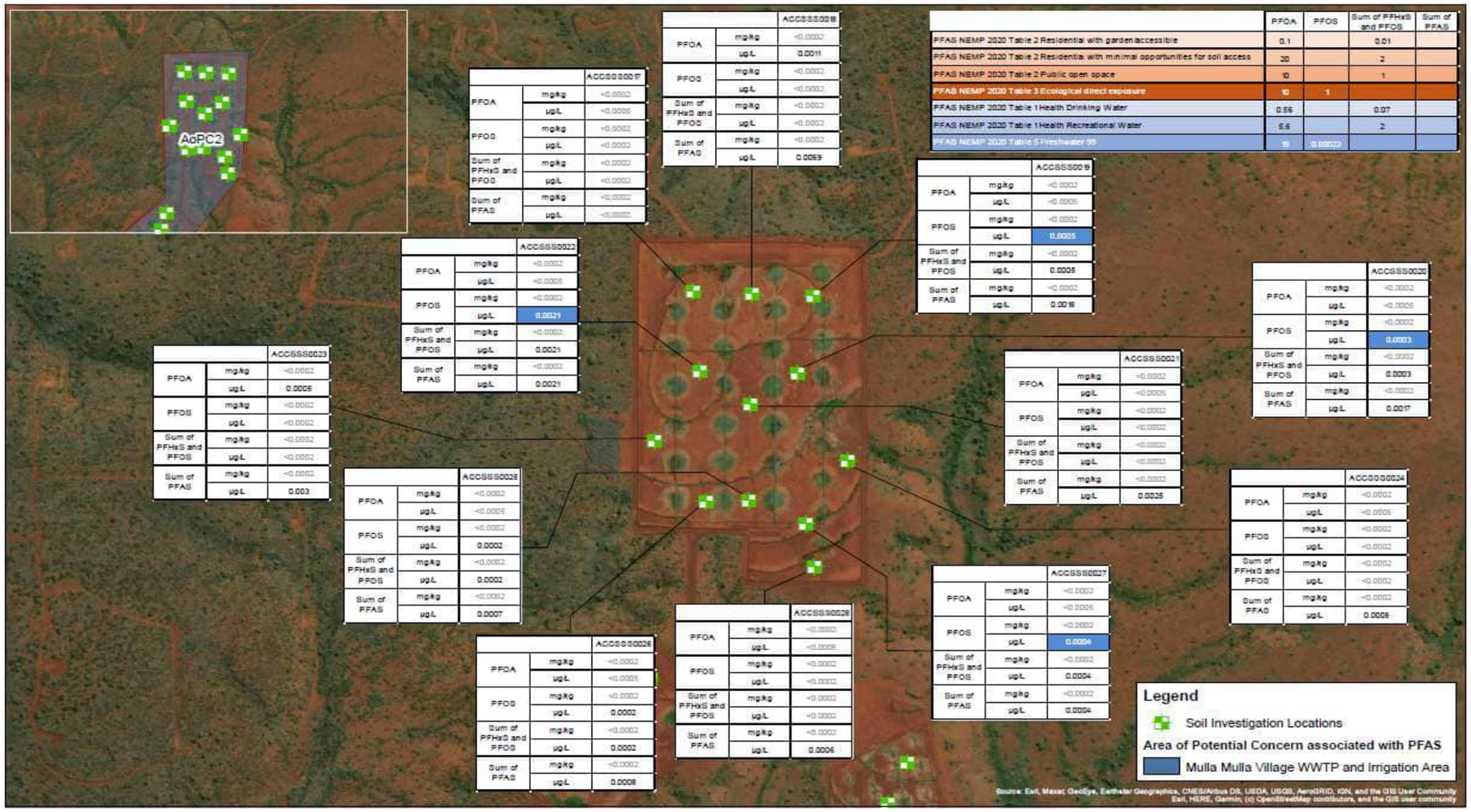
- All concentrations were recorded below the laboratory LOR and adopted human health and ecological assessment criteria.

Leachate

- PFOS concentrations above the 99% freshwater criteria were recorded within four of the 12 samples analysed.
- Concentrations of Perfluoroalkyl Carboxylic Acids were also recorded above the laboratory LOR in 8 of the 12 samples.
- 11 of the 12 samples recorded sum of PFAS concentrations above the laboratory LOR.

Surface water

- A total of three surface water samples were collected associated with Mulla Mulla Village WWTP:
  - A tap sample from a sampling point associated with the WWTP; and
  - Two samples of pooled water in the vicinity of ACCSSS0024 and ACCSSS0028.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	12	PFOA	<0.0002	<0.0002	0.0002	0	0
	12	PFOS	<0.0002	<0.0002	0.0002	-	0
	12	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	12	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Leachate (µg/L)	12	PFOA	<0.0005	0.0011	0.0005	0	0
	12	PFOS	<0.0002	0.0021	0.0002	-	4
	12	PFOS + PFHxS	<0.0002	0.0021	0.0002	0	-
	12	Sum of PFAS	<0.0002	0.0069	0.00125	-	-
Surface Water (µg/L) (Treated)	3	PFOA	0.0008	0.0051	0.0008	0	0
	3	PFOS	<0.0002	<0.0002	0.0002	-	0
	3	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	3	Sum of PFAS	0.0317	0.0718	0.0358	-	-

Table 11-4 AoPC 2 Mulla Mulla Village WWTP Sprayfield 2 – Summary of PFAS Analysis

AoPC 2 (No BHP ID) - Mulla Mulla Village WWTP Sprayfield 2

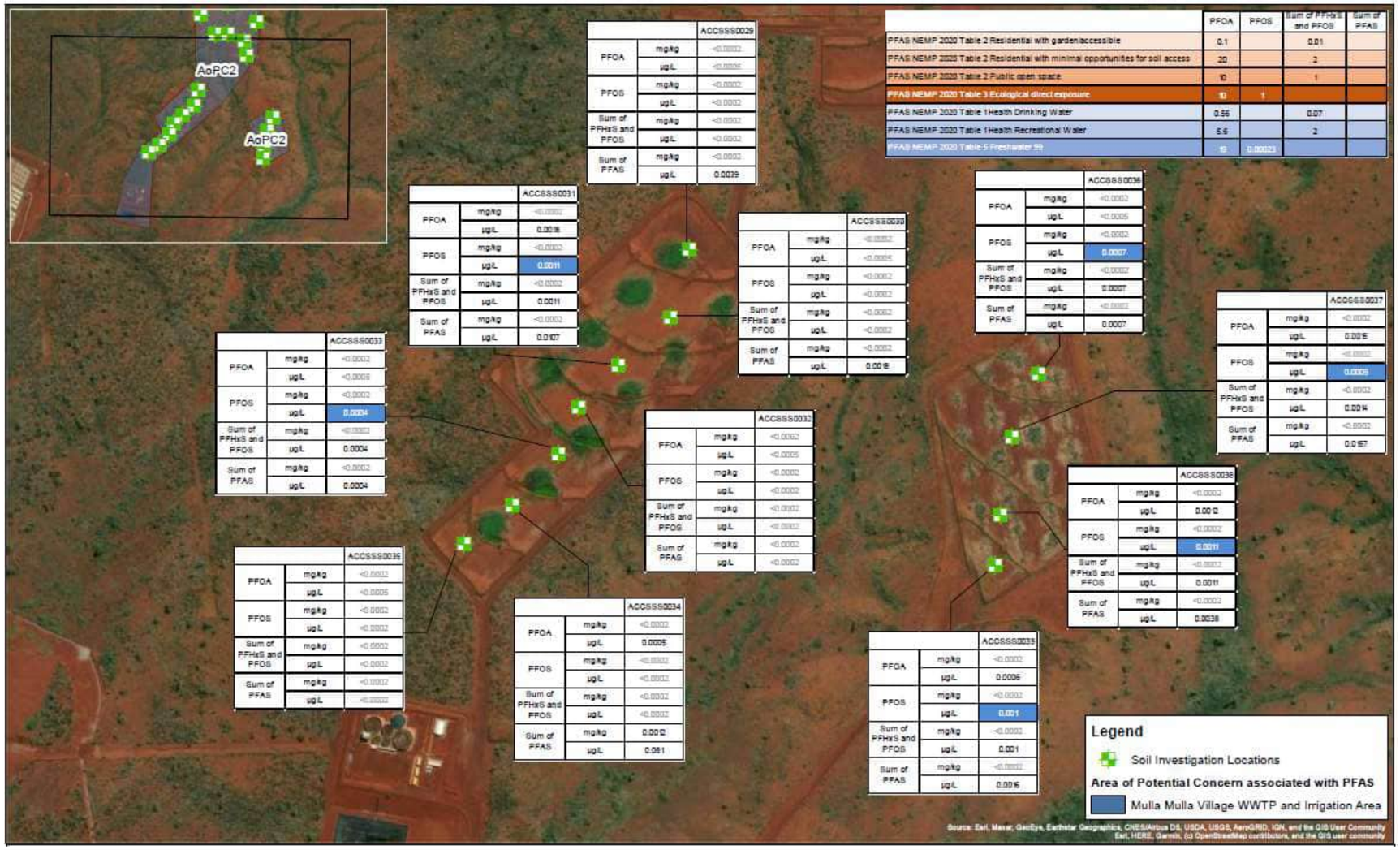
Surface Soil

- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

  Perfluoropentanoic acid (PFPeA) PFHxA

Leachate

- PFOS concentrations above the 99% freshwater criteria were recorded within six of the 11 samples analysed.
- Concentrations of Perfluoroalkyl Carboxylic Acids were also recorded above the laboratory LOR in 7 of the 11 samples.
- Nine of the 11 samples recorded sum of PFAS concentrations above the laboratory LOR.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	11	PFOA	<0.0002	<0.0002	0.0002	0	0
	11	PFOS	<0.0002	<0.0002	0.0002	-	0
	11	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	11	Sum of PFAS	<0.0002	0.0012	0.002	-	-
Leachate (µg/L)	11	PFOA	<0.0005	0.0018	0.0005	0	0
	11	PFOS	<0.0002	0.0011	0.0002	-	6
	11	PFOS + PFHxS	<0.0002	0.0011	0.0002	0	-
	11	Sum of PFAS	<0.0002	0.081	0.0017	-	-

Table 11-5 AoPC 3 New Putrescible Landfill – Summary of PFAS Analysis

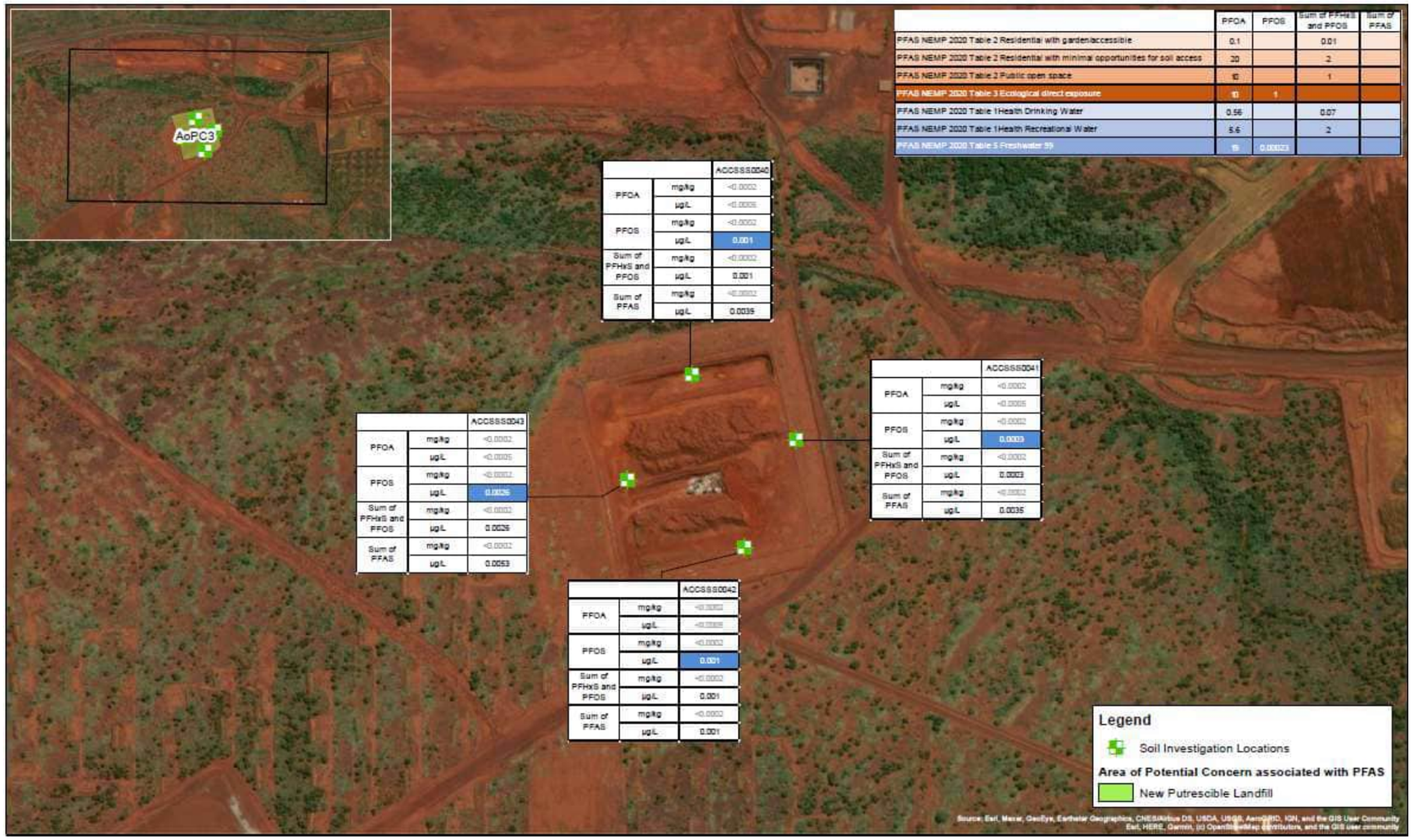
AoPC 3 (No BHP ID) - New Putrescible Landfill

Surface Soil

- All concentrations were recorded below the laboratory LOR and adopted human health and ecological assessment criteria

Leachate

- PFOS concentrations above the 99% freshwater criteria were recorded in all samples analysed.
- Across the samples only Perfluorobutane sulfonic acid (PFBS), PFOS, Perfluorobutanoic acid (PFBA) and PFHxA recorded concentrations above the laboratory LOR.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	4	PFOA	<0.0002	<0.0002	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Leachate (µg/L)	4	PFOA	<0.0005	<0.0005	0.0005	0	0
	4	PFOS	0.0003	0.0026	0.001	-	4
	4	PFOS + PFHxS	0.0003	0.0026	0.001	0	-
	4	Sum of PFAS	0.001	0.0053	0.0037	-	-

Table 11-6 AoPC 4 Western Infiltration Ponds – Summary of PFAS Analysis

AoPC 4 (No BHP ID) - Western Infiltration Pond

Sediment

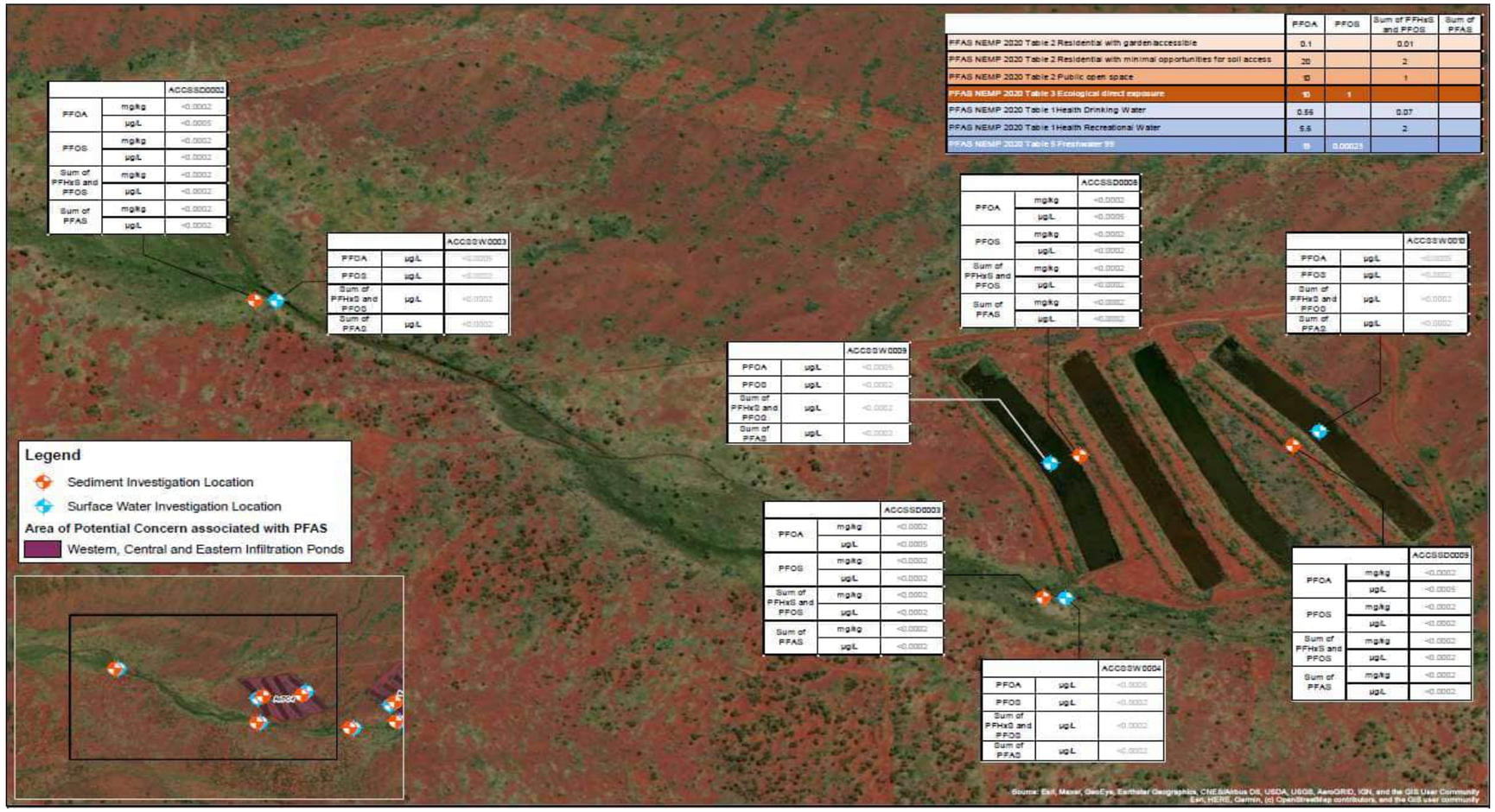
- Concentrations of all sediment samples from the Western Infiltration Pond and discharge creeks recorded concentrations of all PFAS compounds below the laboratory LOR.

Leachate

- Concentrations of all sediment leachate results from the Western Infiltration Pond and discharge creeks recorded concentrations of all PFAS compounds below the laboratory LOR

Surface Water

- Concentrations of all surface water results from the Western Infiltration Pond and discharge creeks recorded concentrations of all PFAS compounds below the laboratory LOR



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Sediment (mg/kg)	4	PFOA	<0.0002	<0.0002	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Leachate (µg/L)	4	PFOA	<0.0005	<0.0005	0.0005	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Surface Water (µg/L)	4	PFOA	<0.0005	<0.0005	0.0005	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-

Table 11-7 AoPC 4 Central Infiltration Ponds – Summary of PFAS Analysis

AoPC 4 (No BHP ID) - Central Infiltration Pond

Sediment

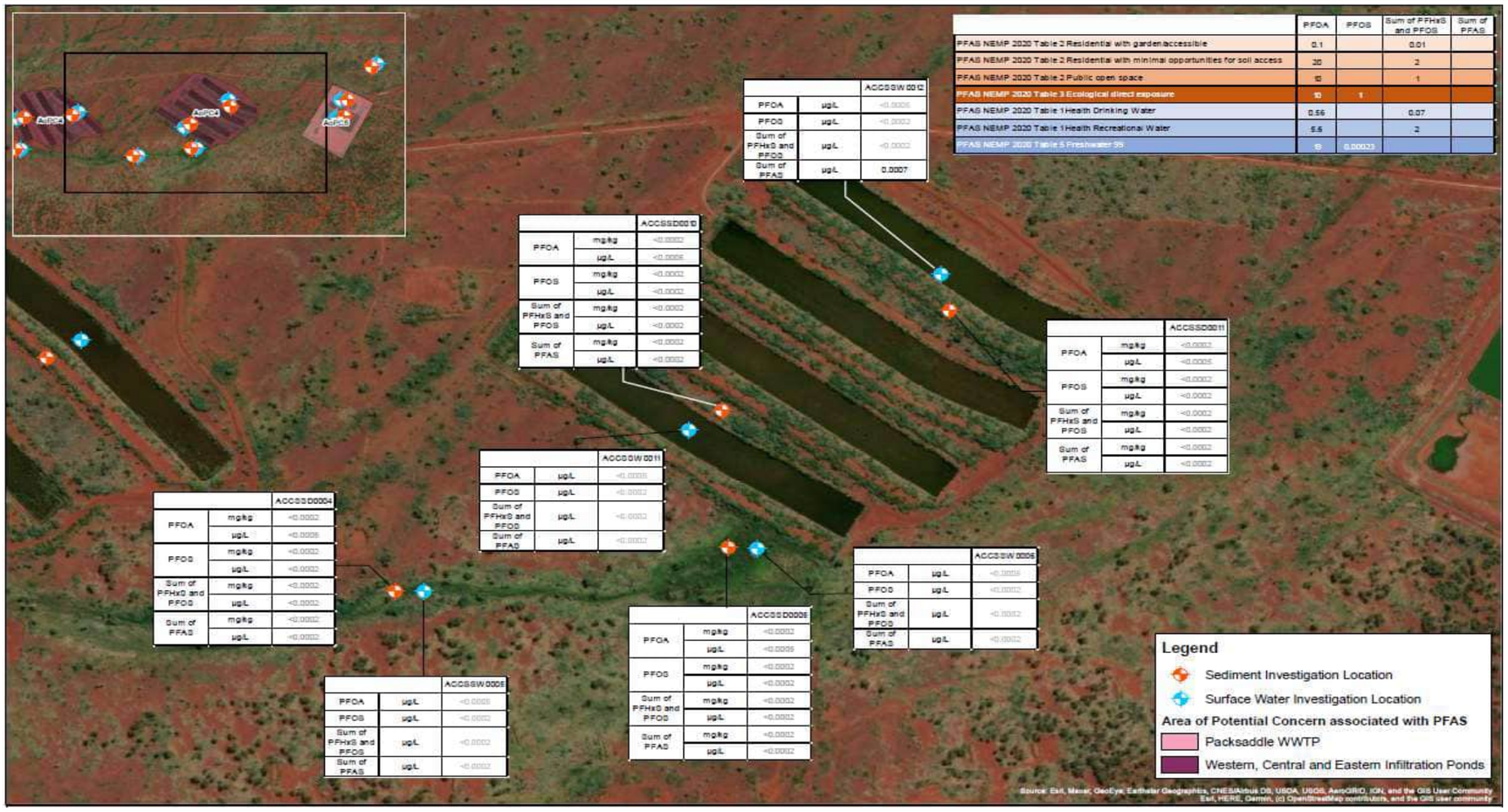
- Concentrations of all sediment samples from the Central Infiltration Pond and discharge creeks recorded concentrations of all PFAS compounds below the laboratory LOR

Leachate

- Concentrations of all sediment leachate results from the Central Infiltration Pond and discharge creeks recorded concentrations of all PFAS compounds below the laboratory LOR

Surface Water

- A single concentration of PFNA (0.0007 µg/L) was recorded above the laboratory LOR within Pond 1 of the Central Infiltration Pond system



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Sediment (mg/kg)	4	PFOA	<0.0002	<0.0002	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Leachate (µg/L)	4	PFOA	<0.0005	<0.0005	0.0005	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	5
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Surface Water (µg/L)	4	PFOA	<0.0005	<0.0005	0.0005	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	0.0007	0.0002	-	-

Table 11-8 AoPC 4 Eastern Infiltration Ponds – Summary of PFAS Analysis

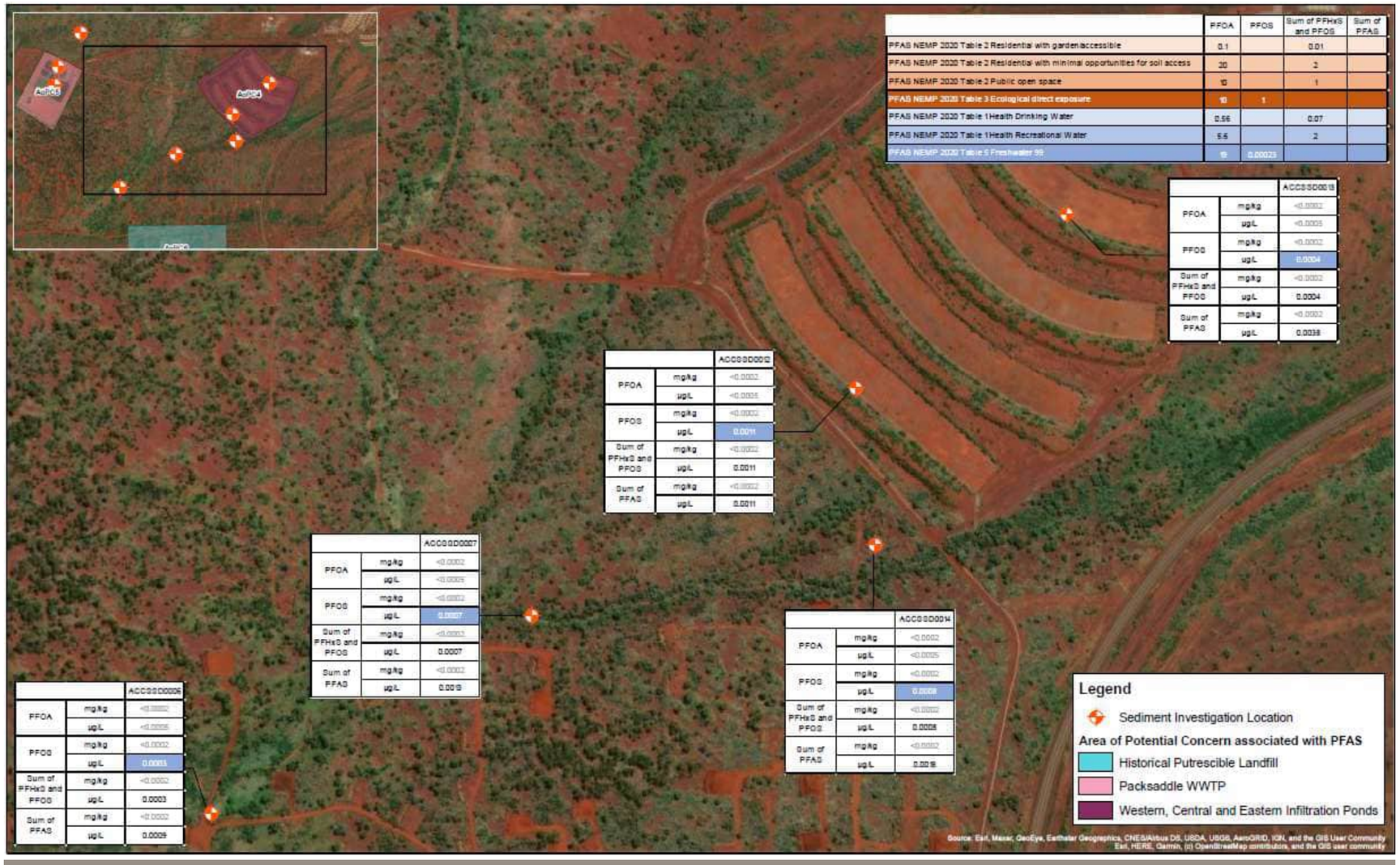
AoPC 4 (No BHP ID) - Eastern Infiltration Pond

Sediment

- Concentrations of all sediment samples from the Eastern Infiltration Pond and discharge creeks recorded concentrations of all PFAS compounds below the laboratory LOR

Leachate

- All samples collected from the Eastern Infiltration Pond and discharge creeks recorded a PFOS concentration above the 99% freshwater criteria
- Concentrations of PFBS and PFBA were also recorded above the laboratory LOR



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Sediment (mg/kg)	5	PFOA	<0.0002	<0.0002	0.0002	0	0
	5	PFOS	<0.0002	<0.0002	0.0002	-	0
	5	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	5	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Leachate (µg/L)	5	PFOA	<0.0005	<0.0005	0.0005	0	0
	5	PFOS	<0.0002	0.0011	0.0002	-	5
	5	PFOS + PFHxS	<0.0002	0.0011	0.0002	0	-
	5	Sum of PFAS	<0.0002	0.0038	0.0002	-	-

Table 11-9 AoPC 5 Packsaddle WWTP – Summary of PFAS Analysis

AoPC 5 (AC-12) – Packsaddle WWTP

Sediment

- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

  PFHxA
  PFHpA
  PFNA
  PFDA
  10:2 FTS

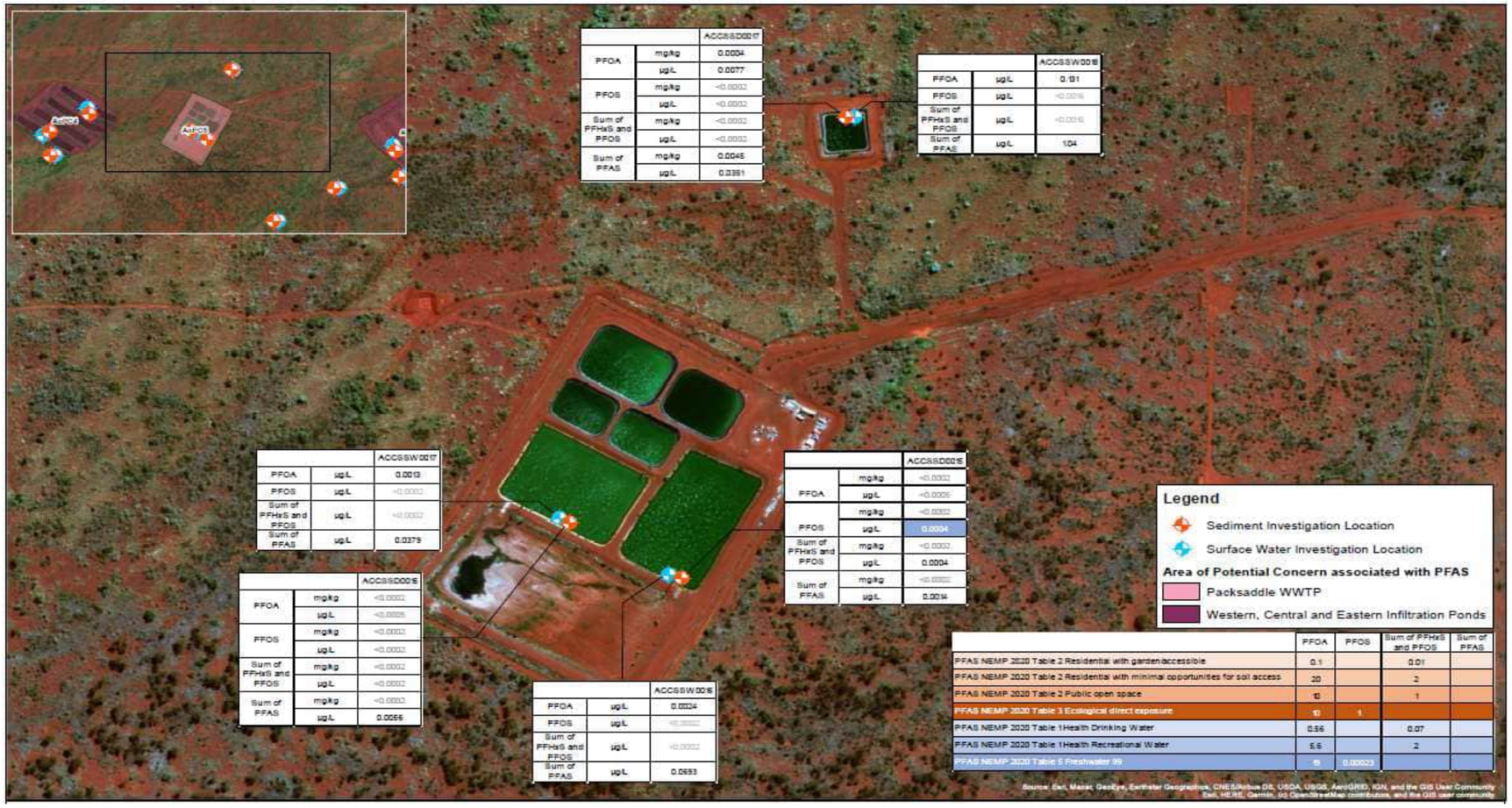
- Sum of PFAS concentrations were recorded above the laboratory LOR in one sample collected (ACCSSD0017).
- Composition of sum of PFAS concentrations in the sediment predominantly belonged to the Perfluoroalkyl Carboxylic Acids group, with 10:2 FTS also recording a concentration above the laboratory LOR.

Leachate

- All sum of PFAS concentrations were recorded above the laboratory LOR, with a single PFOS concentration recorded above the 99% freshwater criteria.
- Concentrations of Perfluoroalkyl Carboxylic Acids and Fluorotelomer Sulfonic Acid compounds were recorded above the laboratory LOR.

Surface Water

- Samples collected from the maturation and infiltration ponds.
- Concentrations of PFOA were recorded above the laboratory LOR in all samples, but below adopted human health and ecological assessment criteria.
- Concentrations of PFOS were recorded below the laboratory LOR.
- Sum of PFAS concentrations of 0.0379 µg/L to 1.04 µg/L were recorded, with the concentrations predominantly comprising PFAS compound PFHxA.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Sediment (mg/kg)	3	PFOA	<0.0002	0.0004	0.0002	0	0
	3	PFOS	<0.0002	<0.0002	0.0002	-	0
	3	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	3	Sum of PFAS	<0.0002	0.0045	0.0002	-	-
Leachate (µg/L)	3	PFOA	<0.0005	0.0077	0.0005	0	0
	3	PFOS	<0.0002	0.0004	0.0002	-	1
	3	PFOS + PFHxS	<0.0002	0.0004	0.0002	0	-
	3	Sum of PFAS	0.0014	0.0351	0.0056	-	-
Surface Water	3	PFOA	0.0013	0.131	0.0024	0	0
	3	PFOS	<0.0002	<0.0002	0.0002	-	0
	3	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	3	Sum of PFAS	0.0379	1.04	0.0693	-	-

Table 11-10 AoPC 7 New Firefighting Training Ground – Summary of PFAS Analysis

AoPC 7 (No BHP ID) - New Firefighting Training Ground

Surface Soil

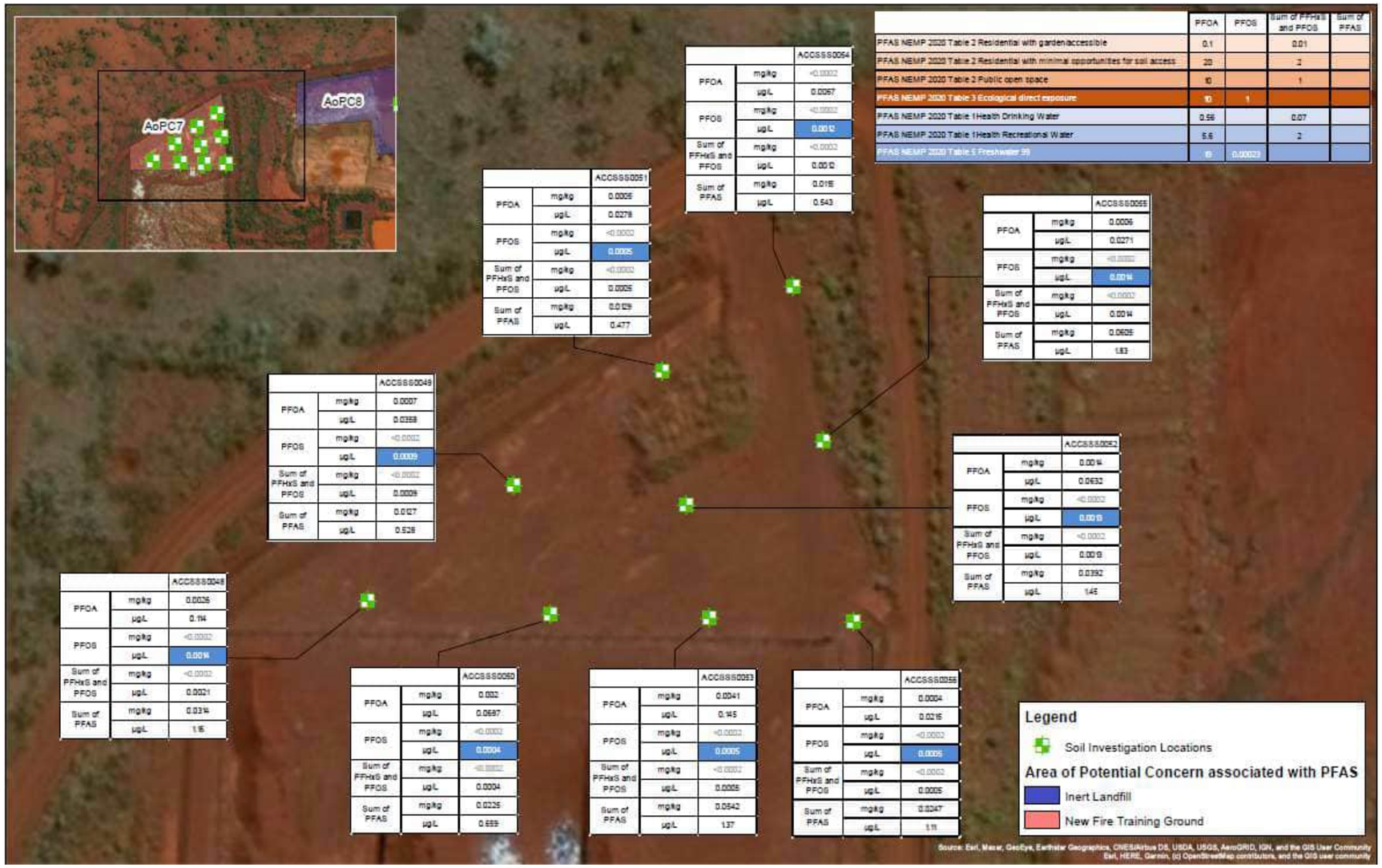
- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

PFPeA	PFUnDA
PFHxA	PFDoDA
PFHpA	6:2 FTS
PFNA	8:2 FTS
PFDA	10:2 FTS

- Sum of PFAS concentrations were recorded above the laboratory LOR in all samples collected.
- Composition of sum of PFAS concentrations in the surface soils predominantly belonged to the Fluorotelomer Sulfonic Acids group.

Leachate

- PFOA recorded concentrations above the laboratory LOR in all samples, but below the adopted human health and ecological assessment criteria.
- All samples recorded a PFOS concentration above the 99% freshwater criteria.
- Concentrations of Perfluorobutane sulfonic acid (PFBS) was noted in samples above the laboratory LOR that were not detected within the soil samples.
- PFAS compounds that reported the highest concentrations across the area belonged to the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups, specifically (maximum concentrations recorded):
  - PFNA – 0.106 µg/L;
  - 6:2 FTS – 1.6 µg/L; and
  - 8:2 FTS – 0.479 µg/L.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	9	PFOA	<0.0002	0.0041	0.0007	0	0
	9	PFOS	<0.0002	<0.0002	0.0002	-	0
	9	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	9	Sum of PFAS	0.0115	0.0605	0.0247	-	-
Leachate (µg/L)	9	PFOA	0.0067	0.145	0.0358	0	0
	9	PFOS	0.0004	0.0014	0.0009	-	9
	9	PFOS + PFHxS	0.0004	0.0021	0.0009	0	-
	9	Sum of PFAS	0.477	1.83	1.11	-	-

Table 11-11 AoPC 8 Inert Landfill – Summary of PFAS Analysis

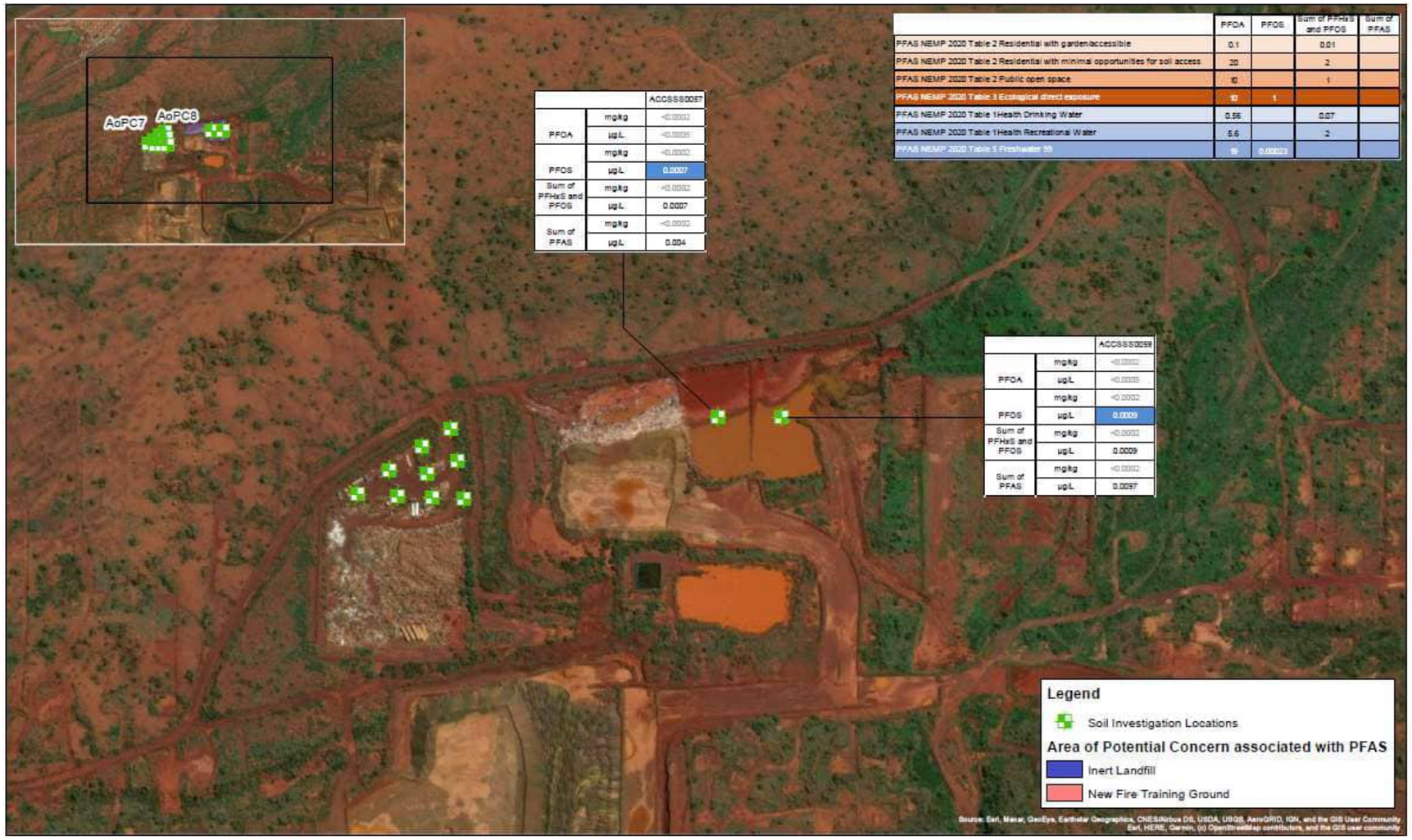
AoPC 8 (No BHP ID) - Inert Landfill

Surface Soil

- Both concentrations were recorded below the laboratory LOR and adopted human health and ecological assessment criteria.

Leachate

- PFOS concentrations above the 99% freshwater criteria were recorded in both samples.
- Only PFBS, PFOS, PFPeA, PFHxA and 6:2 FTS recorded concentrations above the laboratory LOR.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	2	PFOA	<0.0002	<0.0002	0.0002	0	0
	2	PFOS	<0.0002	<0.0002	0.0002	-	0
	2	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	2	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Leachate (µg/L)	2	PFOA	<0.0005	<0.0005	0.0005	0	0
	2	PFOS	0.0007	0.0009	0.0008	-	2
	2	PFOS + PFHxS	0.0007	0.0009	0.0008	0	-
	2	Sum of PFAS	0.004	0.0097	0.00685	-	-

Table 11-12 AoPC 9 MAC Medical Centre – Summary of PFAS Analysis

AoPC 9 (AC-22) - MAC Medical Centre

Surface Soil

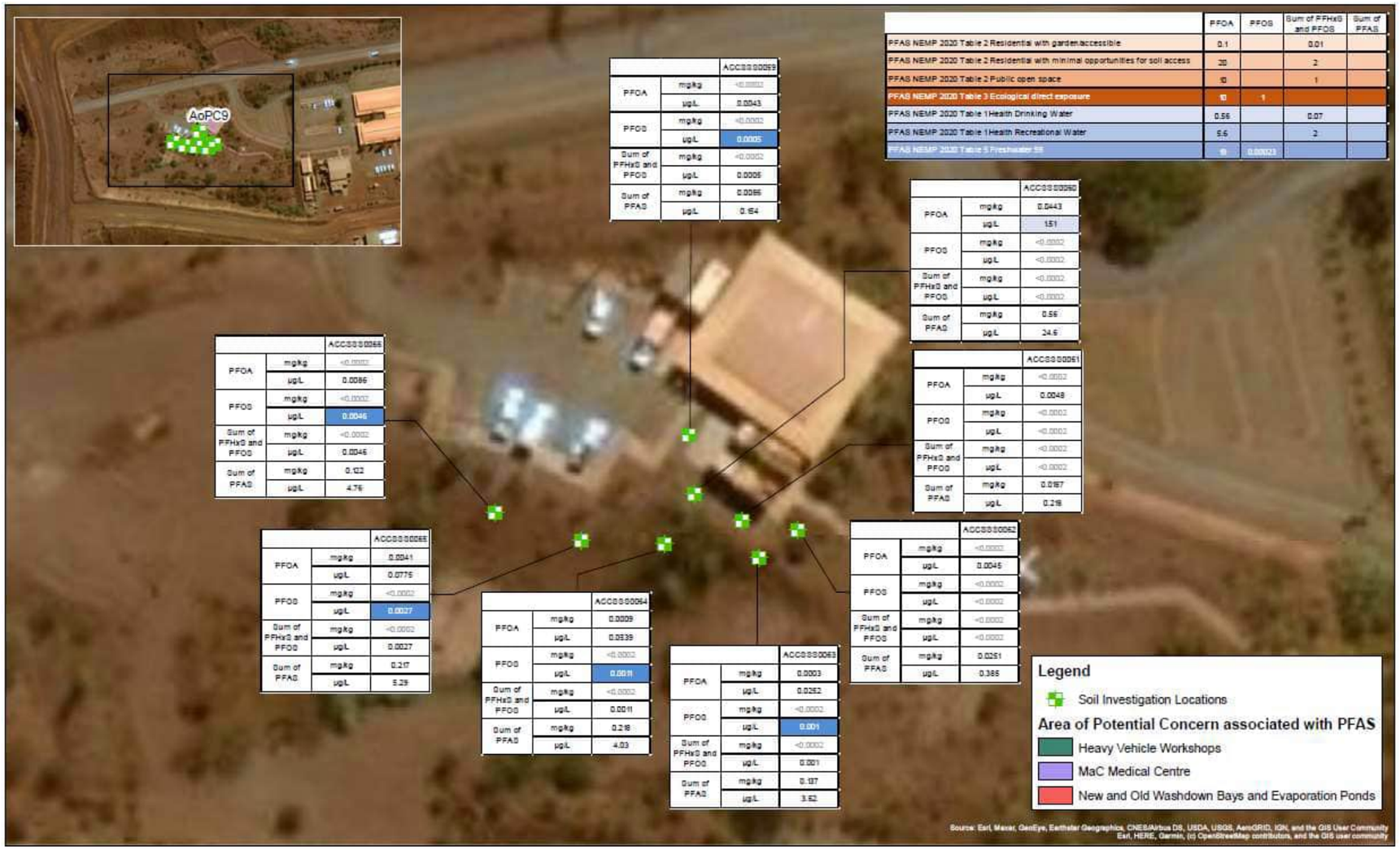
- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

Perfluorobutanoic acid (PFBA)	PFDoDA
PFPeA	PFTrDA
PFHxA	Perfluorotetradecanoic acid (PFTeDA)
PFHpA	6:2 FTS
PFNA	8:2 FTS
PFDA	10:2 FTS
PFUnDA	

- Sum of PFAS concentrations were recorded above the laboratory LOR in all samples collected.
- The highest concentrations were recorded in the samples collected adjacent to the concrete pad utilised for the parking of emergency vehicles and washing equipment.
- The composition of sum of PFAS concentrations in the surface soils predominantly belonged to the Fluorotelomer Sulfonic Acids group.

Leachate

- PFOA was recorded above the laboratory LOR in all samples with a single concentration (1.51 µg/L) recorded above the drinking water guideline (0.56 µg/L).
- PFOS concentrations were recorded above the 99% freshwater criteria in five of the nine samples analysed.
- The PFAS compounds that reported the highest concentrations across the area belonged to the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups, specifically (maximum concentrations recorded):
  - PFDA – 0.188 µg/L;
  - 6:2 FTS – 22.3 µg/L;
  - 8:2 FTS – 4.44 µg/L.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	8	PFOA	<0.0002	0.0443	0.00025	0	0
	8	PFOS	<0.0002	<0.0002	0.0002	-	0
	8	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	8	Sum of PFAS	0.0086	0.56	0.1295	-	-
Leachate (µg/L)	8	PFOA	0.0043	1.51	0.0169	1	0
	8	PFOS	<0.0002	0.0046	0.00075	-	5
	8	PFOS + PFHxS	<0.0002	0.0046	0.00075	0	-
	8	Sum of PFAS	0.154	24.6	3.825	-	-

Table 11-13 AoPC 10 Heavy Vehicle Workshops – Summary of PFAS Analysis

AoPC 10 (AC-09) - Heavy Vehicle Workshops

Surface Soil

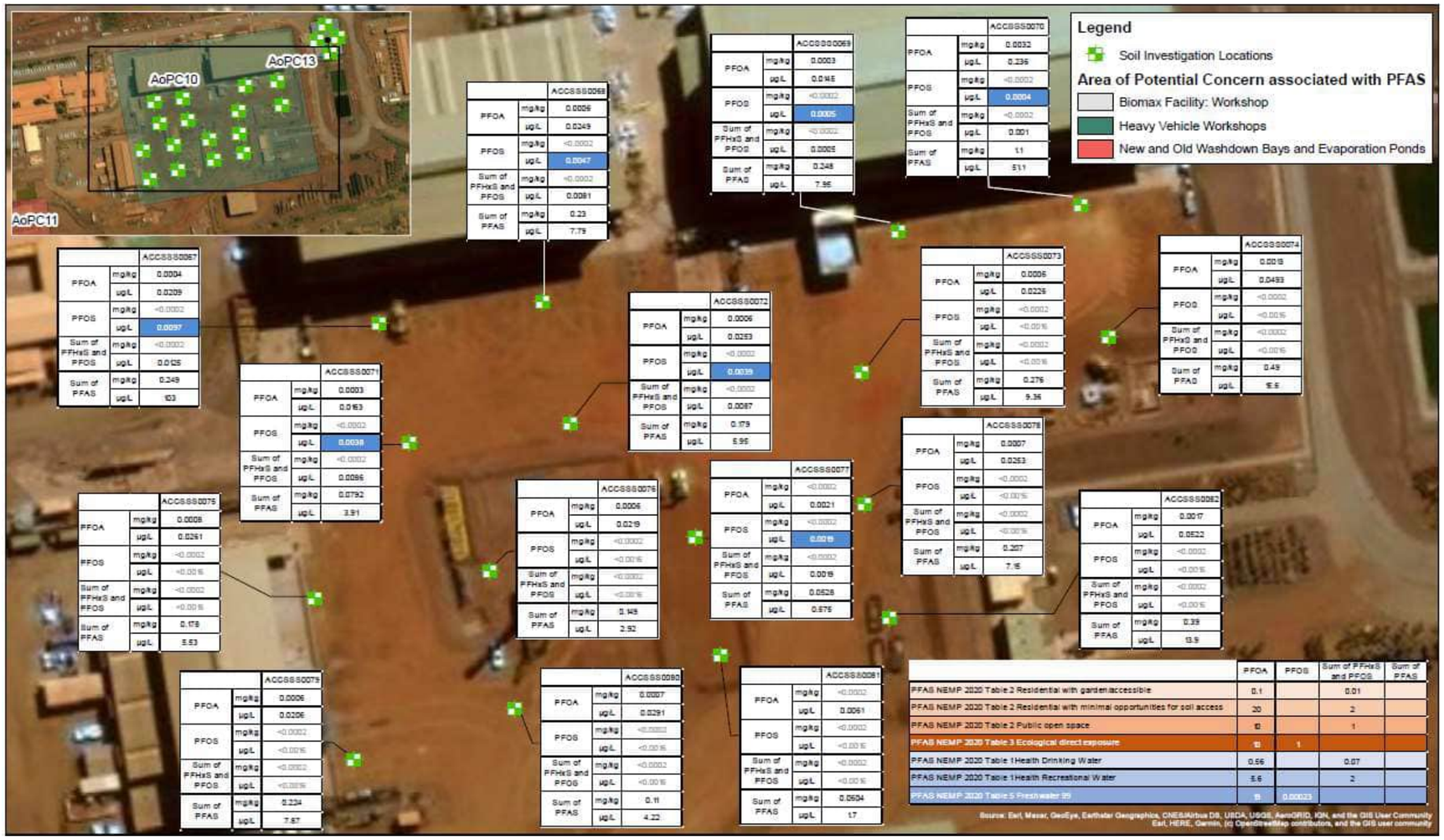
- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

Perfluorobutanoic acid (PFBA)	PFDoDA
PFPeA	Perfluorotetradecanoic acid (PFTeDA)
PFHxA	6:2 FTS
PFHpA	8:2 FTS
PFNA	10:2 FTS
PFDA	

- Sum of PFAS concentrations were recorded above the laboratory LOR in all samples collected.
- The highest concentration was recorded at the entrance of Bay 18, at the eastern extent of the workshop area.
- The composition of sum of PFAS concentrations in the surface soils predominantly belonged to the Fluorotelomer Sulfonic Acids group.

Leachate

- PFOA recorded concentrations above the laboratory LOR in all samples, but below the adopted human health and ecological assessment criteria.
- A total of seven of the 16 samples across the HV workshop area recorded a PFOS concentration above the 99% freshwater criteria.
- PFAS compounds that reported the highest concentrations across the area belonged to the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups, specifically (maximum concentrations recorded):
  - PFPeA – 1.23 µg/L;
  - PFHxA – 93.3 µg/L;
  - 6:2 FTS – 48 µg/L.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	16	PFOA	<0.0002	0.0032	0.0006	0	0
	16	PFOS	<0.0002	<0.0002	0.0002	-	0
	16	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	16	Sum of PFAS	0.0528	1.1	0.2155	-	-
Leachate (µg/L)	16	PFOA	0.0021	0.236	0.0370	0	0
	16	PFOS	<0.0016	0.0097	0.0016	-	16*
	16	PFOS + PFHxS	<0.0016	0.0125	0.0016	0	-
	16	Sum of PFAS	0.575	103	7.47	-	-

* LOR above adopted ecological assessment criteria. ALS indicated samples required dilution due to the presence of high-level contaminants. LOR values have been adjusted accordingly.

Table 11-14 AoPC 10 Heavy Vehicle Workshops (Evaporation Ponds) – Summary of PFAS Analysis

AoPC 10 (AC-09) - Heavy Vehicle Workshops (Evaporation Ponds)

Sediment

- Concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

PFBA	PFNA	6:2 FTS
PFPeA	PFDA	8:2 FTS
PFHxA	PFUnDA	10:2 FTS
PFHpA	PFDoDA	

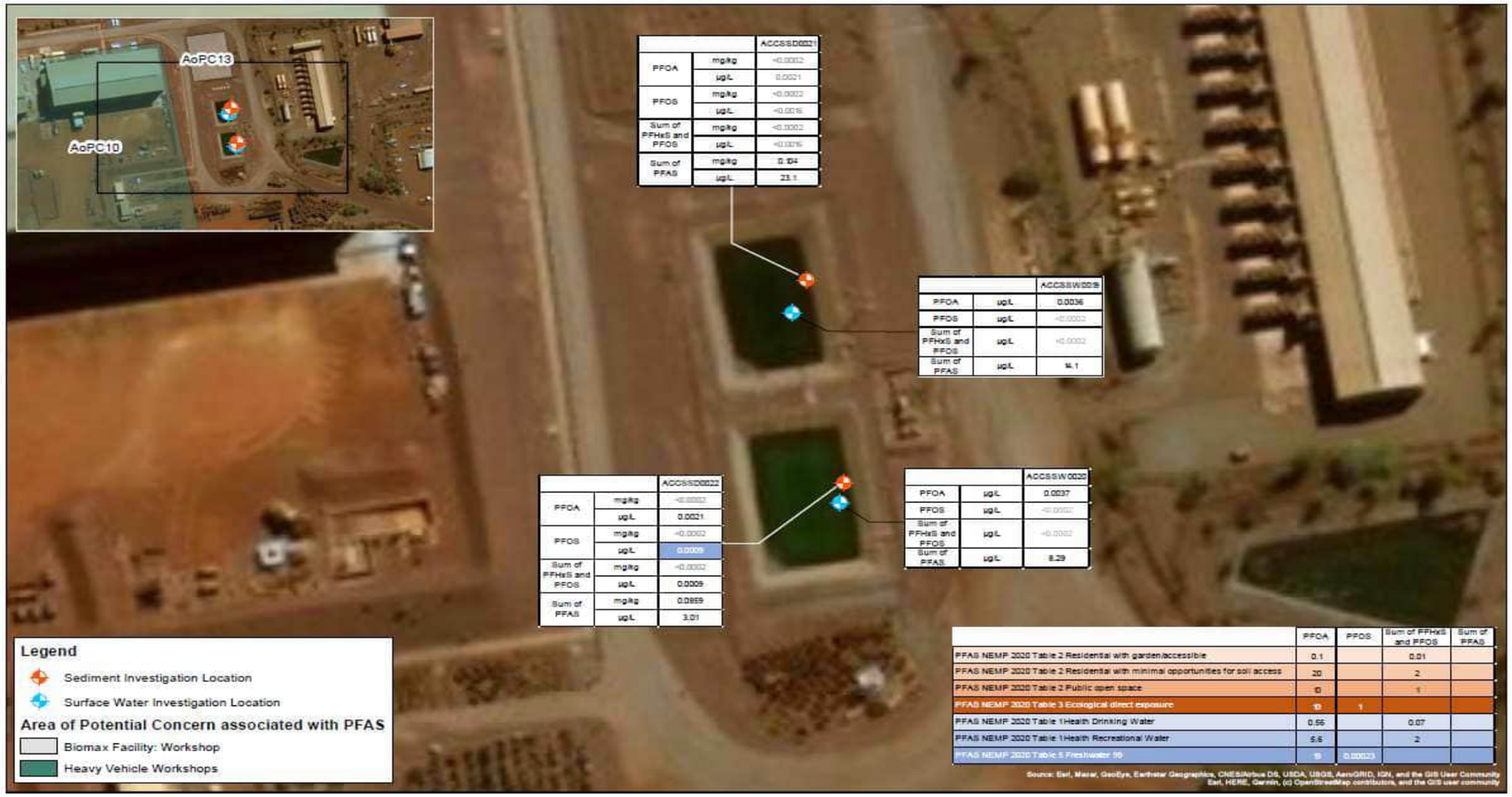
- Sum of PFAS concentrations were recorded above the laboratory LOR in both samples collected.
- The composition of sum of PFAS concentrations in the sediment samples predominantly belonged to the Fluorotelomer Sulfonic Acids group.

Leachate

- Sum of PFAS concentrations were recorded above the laboratory LOR in both samples with a single sample recording a PFOS concentration above the 99% freshwater criteria.
- Concentrations of Perfluoroalkyl Carboxylic Acids and Fluorotelomer Sulfonic Acid compounds were recorded above the laboratory LOR.
- A concentration of 6:2 FTS concentration of 22.6 µg/L was recorded.

Surface Water

- Concentrations of PFOA were recorded above the laboratory LOR in both samples, but below adopted human health and ecological assessment criteria.
- Concentrations of PFOS were recorded below the laboratory LOR.
- Sum of PFAS concentrations of 8.29 µg/L and 14.1 µg/L were recorded, with the concentrations predominantly comprising PFAS compounds PFHxA and 6:2 FTS.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Sediment (mg/kg)	2	PFOA	<0.0002	<0.0002	0.0002	0	0
	2	PFOS	<0.0002	<0.0002	0.0002	-	0
	2	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	2	Sum of PFAS	0.0859	0.104	0.09495	-	-
Leachate (µg/L)	2	PFOA	0.0021	0.0021	0.0021	0	0
	2	PFOS	<0.0016	0.0009	0.00125	-	2*
	2	PFOS + PFHxS	<0.0016	0.0009	0.00125	0	-
	2	Sum of PFAS	3.01	23.2	13.105	-	-
Surface Water (µg/L)	2	PFOA	0.0036	0.0037	0.00365	0	0
	2	PFOS	<0.0002	<0.0002	0.0002	-	0
	2	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	2	Sum of PFAS	8.29	14.1	11.195	-	-

* LOR above adopted ecological assessment criteria. ALS indicated samples required dilution due to the presence of high-level contaminants. LOR values have been adjusted accordingly.

Table 11-15 AoPC 11 Washdown Bays and Evaporation Ponds – Surface Soil Summary of PFAS Analysis

AoPC 11 (AC-10 and AC-11) - Washdown Bays and Evaporation Ponds – Surface Soil

Surface Soil

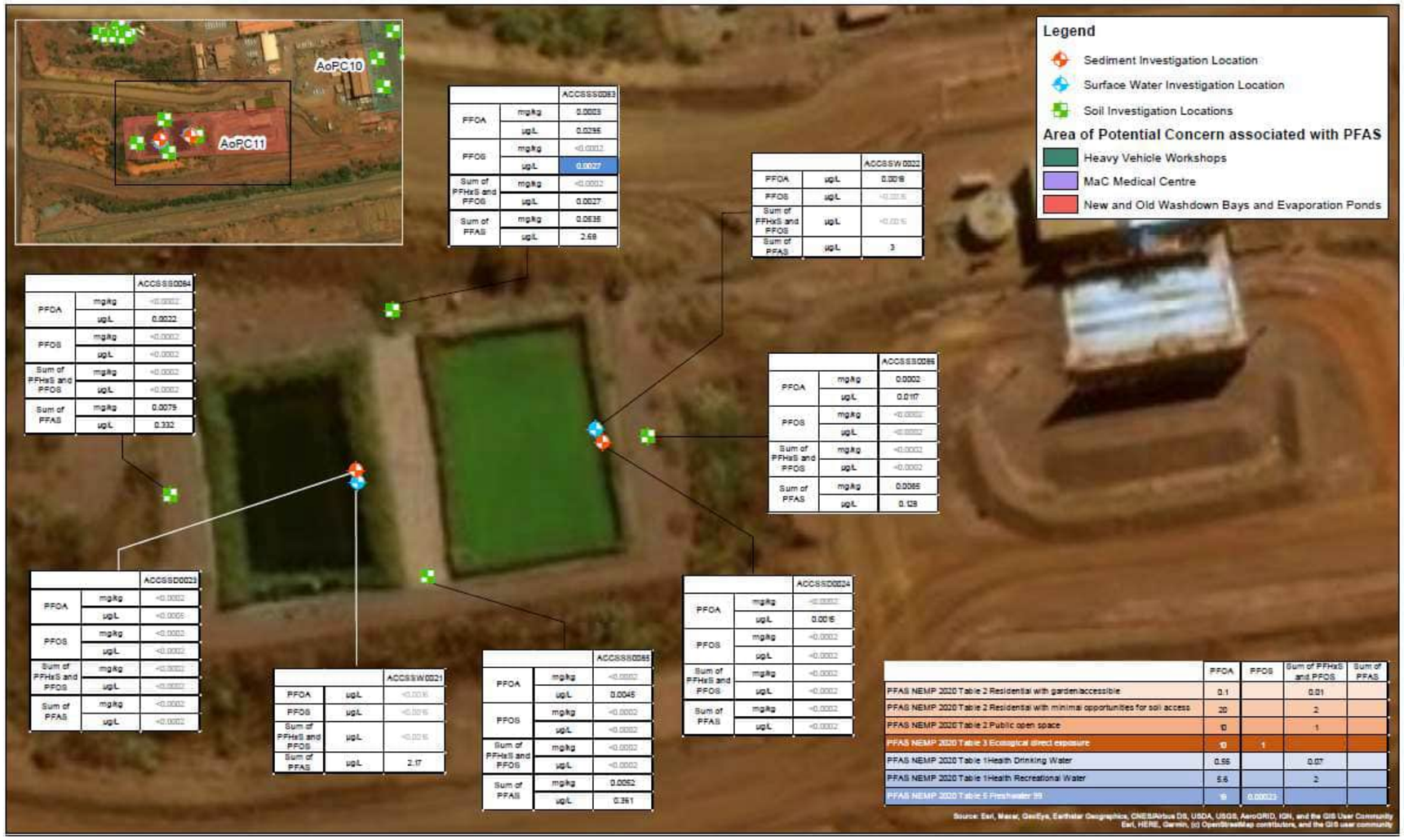
- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

PFBA	PFDoDA
PFPeA	Perfluorotetradecanoic acid (PFTeDA)
PFHxA	6:2 FTS
PFHpA	8:2 FTS
PFNA	10:2 FTS
PFDA	

- Sum of PFAS concentrations were recorded above the laboratory LOR in all samples collected.
- The highest concentration was recorded to the north of evaporation ponds.
- PFAS compounds reported predominantly belonged to the Perfluoroalkyl Carboxylic Acids group, in particular PFPeA and PFHxA.

Leachate

- PFOA recorded concentrations above the laboratory LOR in all samples, but below the adopted human health and ecological assessment criteria
- One sample recorded a PFOS concentration above the 99% freshwater criteria.
- PFAS compounds that reported the highest concentrations across the area belonged to the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	4	PFOA	<0.0002	0.0007	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	0.002	0.0002	-	-
Leachate (µg/L)	4	PFOA	0.0022	0.0295	0.0081	0	0
	4	PFOS	<0.0002	0.0027	0.0002	-	1
	4	PFOS + PFHxS	<0.0002	0.0027	0.0002	0	-
	4	Sum of PFAS	0.128	2.68	0.3465	-	-

* LOR above adopted ecological assessment criteria. ALS indicated samples required dilution due to the presence of high-level contaminants. LOR values have been adjusted accordingly.

Table 11-16 AoPC 11 Washdown Bays and Evaporation Ponds – SW and Sediment Summary of PFAS Analysis

AoPC 11 (AC-10 and AC-11) - Washdown Bays and Evaporation Ponds – Surface Water and Sediment

Sediment

- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR in at least one sample:

  PFPeA 6:2 FTS

  PFHxA 10:2 FTS

- Sum of PFAS concentrations were recorded above the laboratory LOR in both samples collected.
- The composition of sum of PFAS concentrations in the sediment samples predominantly belonged to the Fluorotelomer Sulfonic Acids group.

Leachate

- PFOA and PFOS Concentrations were below adopted human health and ecological assessment criteria.
- Sum of PFAS concentrations were recorded above the laboratory LOR in both samples.
- Concentrations of Perfluoroalkyl Carboxylic Acids and Fluorotelomer Sulfonic Acid compounds were recorded above the laboratory LOR.

Surface Water

- A concentration of PFOA was recorded above the laboratory LOR in both samples, but below adopted human health and ecological assessment criteria.
- Concentrations of PFOS were recorded below the laboratory LOR.
- Sum of PFAS concentrations of 2.17 µg/L and 3.0 µg/L were recorded, with the concentrations predominantly comprising PFAS compound 6:2 FTS



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Sediment (mg/kg)	2	PFOA	<0.0002	<0.0002	0.0002	0	0
	2	PFOS	<0.0002	<0.0002	0.0002	-	0
	2	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	2	Sum of PFAS	0.0008	0.0091	0.00495	-	-
Leachate (µg/L)	2	PFOA	<0.0005	0.0015	0.001	0	0
	2	PFOS	<0.0002	<0.0002	0.0002	-	0
	2	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	2	Sum of PFAS	0.0518	0.359	0.2054	-	-
Surface Water	2	PFOA	<0.0016	0.0018	0.0017	0	0
	2	PFOS	<0.0016	<0.0016	0.0016	-	2*
	2	PFOS + PFHxS	<0.0016	<0.0016	0.0016	0	-
	2	Sum of PFAS	2.17	3	2.585	-	-

* LOR above adopted ecological assessment criteria. ALS indicated samples required dilution due to the presence of high-level contaminants. LOR values have been adjusted accordingly.

Table 11-17 AoPC 12 Bioremediation Farm – Summary of PFAS Analysis

AoPC 12 (AC-03) - Bioremediation Farm

Sediment

- All concentrations were recorded below the adopted human health and ecological assessment criteria.
- Concentrations of the following PFAS compounds were recorded above the laboratory LOR:

PFBA	PFDA
PFPeA	PFDoDA
PFHxA	6:2 FTS
PFHpA	8:2 FTS
PFNA	10:2 FTS

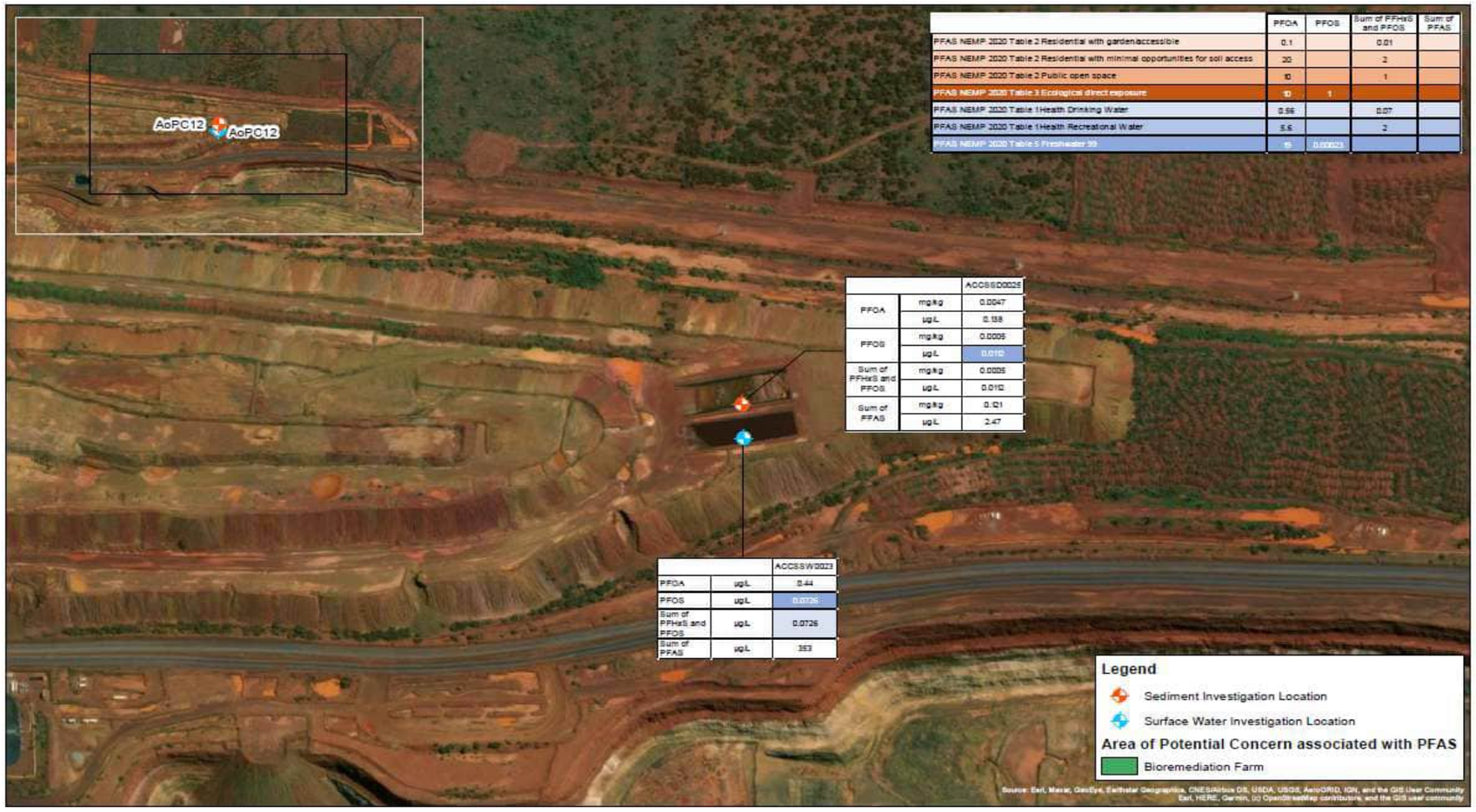
- The highest individual PFAS concentration was 0.0572 mg/kg, relating to PFPeA.

Leachate

- Concentrations of Perfluoroalkyl Carboxylic Acids and Fluorotelomer Sulfonic Acid compounds above the laboratory LOR.
- PFOS was recorded above the 99% freshwater criteria.

Surface Water

- PFOA was recorded above the laboratory LOR, but below the adopted human health and ecological assessment criteria.
- A concentration of PFOS (0.0726 µg/L) was recorded above the 99% freshwater criteria.
- The sum of PFHxS and PFOS was recorded above the adopted human health assessment criteria (Drinking Water 0.07 µg/L).
- A concentration of 338 µg/L of 6:2 FTS was recorded.



Sample Type	No. of Samples	Analyte	Concentration	Above Adopted Human Health Criteria	Above Adopted Ecological Criteria
Sediment (mg/kg)	1	PFOA	0.0047	No	No
	1	PFOS	0.0005	-	0
	1	PFOS + PFHxS	0.0005	No	-
	1	Sum of PFAS	0.121	-	-
Leachate (µg/L)	1	PFOA	0.138	No	No
	1	PFOS	0.0112	No	Yes
	1	PFOS + PFHxS	0.0112	No	-
	1	Sum of PFAS	2.47	-	-
Surface Water (µg/L)	1	PFOA	0.44	No	No
	1	PFOS	0.0726	-	Yes
	1	PFOS + PFHxS	0.0726	Yes	-
	1	Sum of PFAS	353	-	-

Table 11-18 AoPC 13 BioMax Facility Irrigation Area (Medical Centre) – Summary of PFAS Analysis

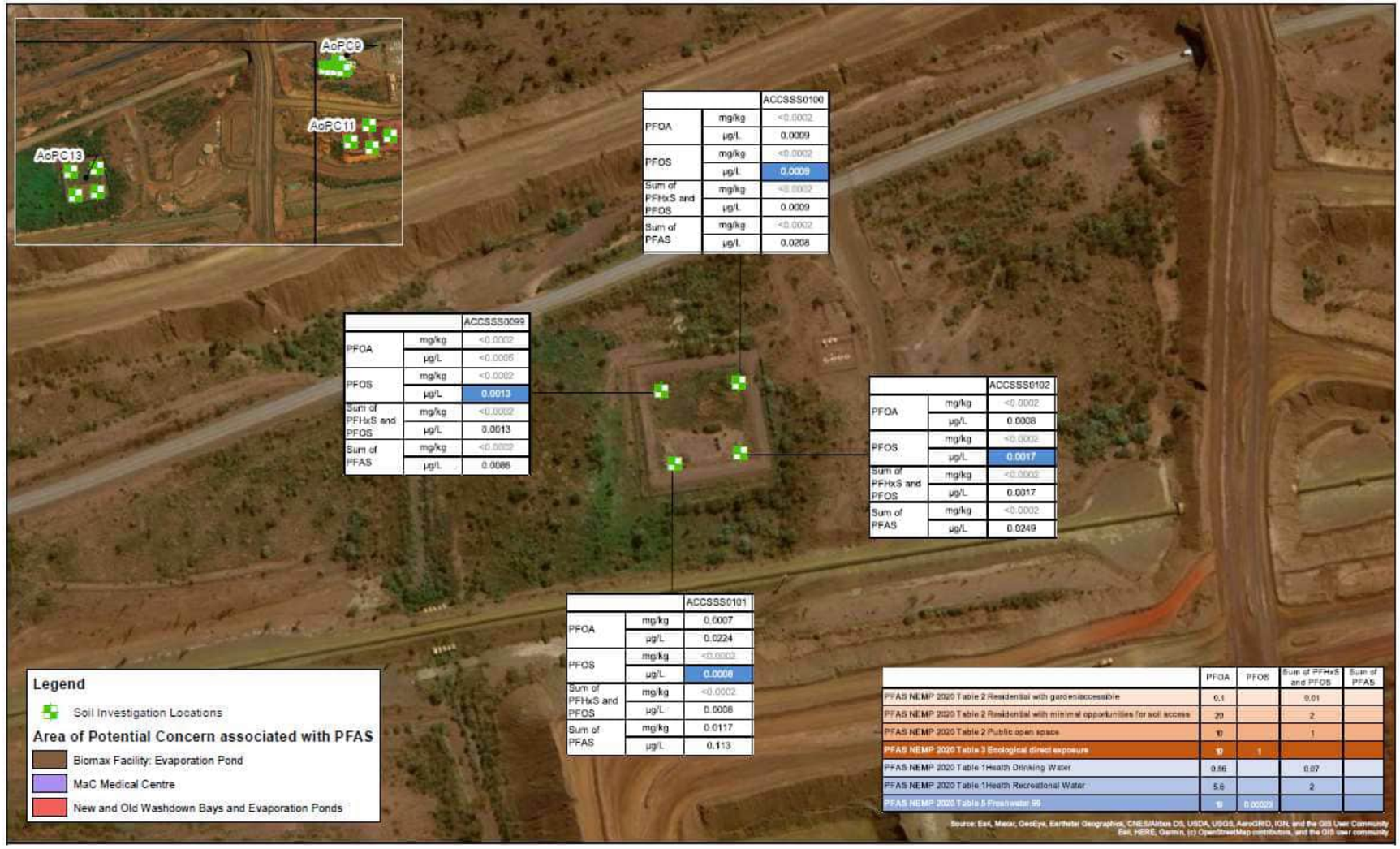
AoPC 13 (AC-18) - BioMax Facility Irrigation Area (Medical Centre)

Surface Soil

- PFOA was recorded above the laboratory LOR in one of the four samples, all concentrations were below the adopted human health and ecological assessment criteria.
- All concentrations of PFOS were recorded below the laboratory LOR.
- Sum of PFAS concentrations were recorded above the laboratory LOR in one of the four samples, concentrations predominantly belonged to the Perfluoroalkyl Carboxylic Acid group.

Leachate

- PFOA was recorded above the laboratory LOR in three of the four samples, all concentrations were below the adopted human health and ecological assessment criteria.
- All samples recorded a PFOS concentration above the 99% freshwater criteria.
- Sum of PFAS concentrations were recorded above the laboratory LOR in one of the four samples, concentrations predominantly belonged to the Perfluoroalkyl Carboxylic Acid group.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	4	PFOA	<0.0002	0.0007	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	0.0117	0.0002	-	-
Leachate (µg/L)	4	PFOA	<0.0005	0.0224	0.00085	0	0
	4	PFOS	0.0008	0.0017	0.0011	-	4
	4	PFOS + PFHxS	0.0008	0.0017	0.0011	0	-
	4	Sum of PFAS	0.0086	0.113	0.02285	-	-

Table 11-19 AoPC 13 BioMax Facility Irrigation Area (Core Shed) – Summary of PFAS Analysis

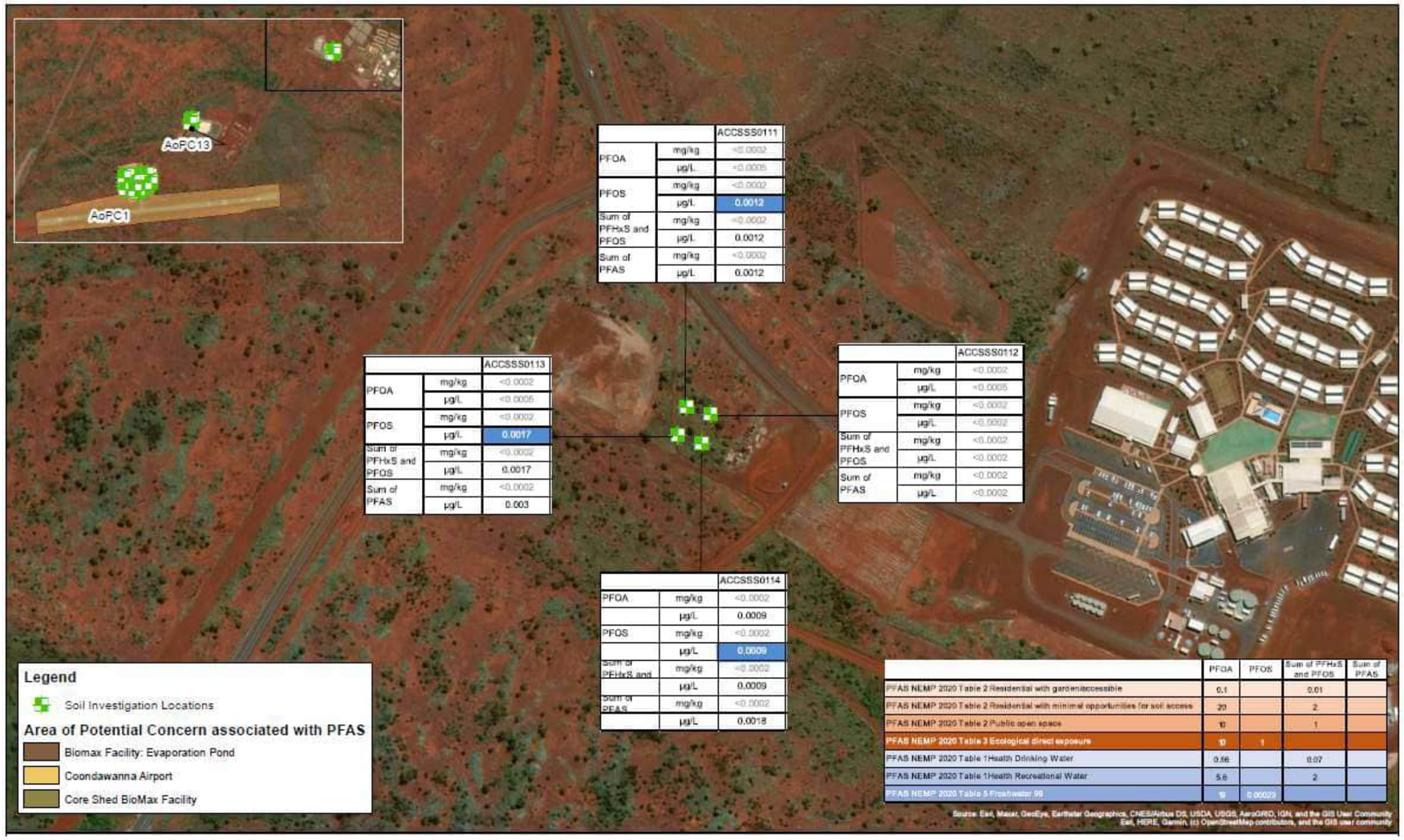
AoPC 13 (No BHP ID) - BioMax Facility Irrigation Area (Core Shed)

Surface Soil

- PFOA was recorded below the laboratory LOR in all samples.
- PFOS was recorded below the laboratory LOR in all samples.
- Sum of PFAS concentrations were recorded below the laboratory LOR in all samples.

Leachate

- PFOA was recorded above the laboratory LOR in one of the four samples, all concentrations were below the adopted human health and ecological assessment criteria.
- Three of the four samples recorded a PFOS concentration above the 99% freshwater criteria.
- Sum of PFAS concentrations were recorded above the laboratory LOR in three of the four samples, concentrations predominantly belonged to the Perfluoroalkyl Sulfonic Acids group.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	4	PFOA	<0.0002	<0.0002	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	<0.0002	0.0002	-	-
Leachate (µg/L)	4	PFOA	<0.0005	0.0009	0.0005	0	0
	4	PFOS	<0.0002	0.0017	0.00105	-	3
	4	PFOS + PFHxS	<0.0002	0.0017	0.00105	0	-
	4	Sum of PFAS	<0.0002	0.003	0.0015	-	-

Table 11-20 AoPC 13 BioMax Facility Irrigation Area (Workshop) – Summary of PFAS Analysis

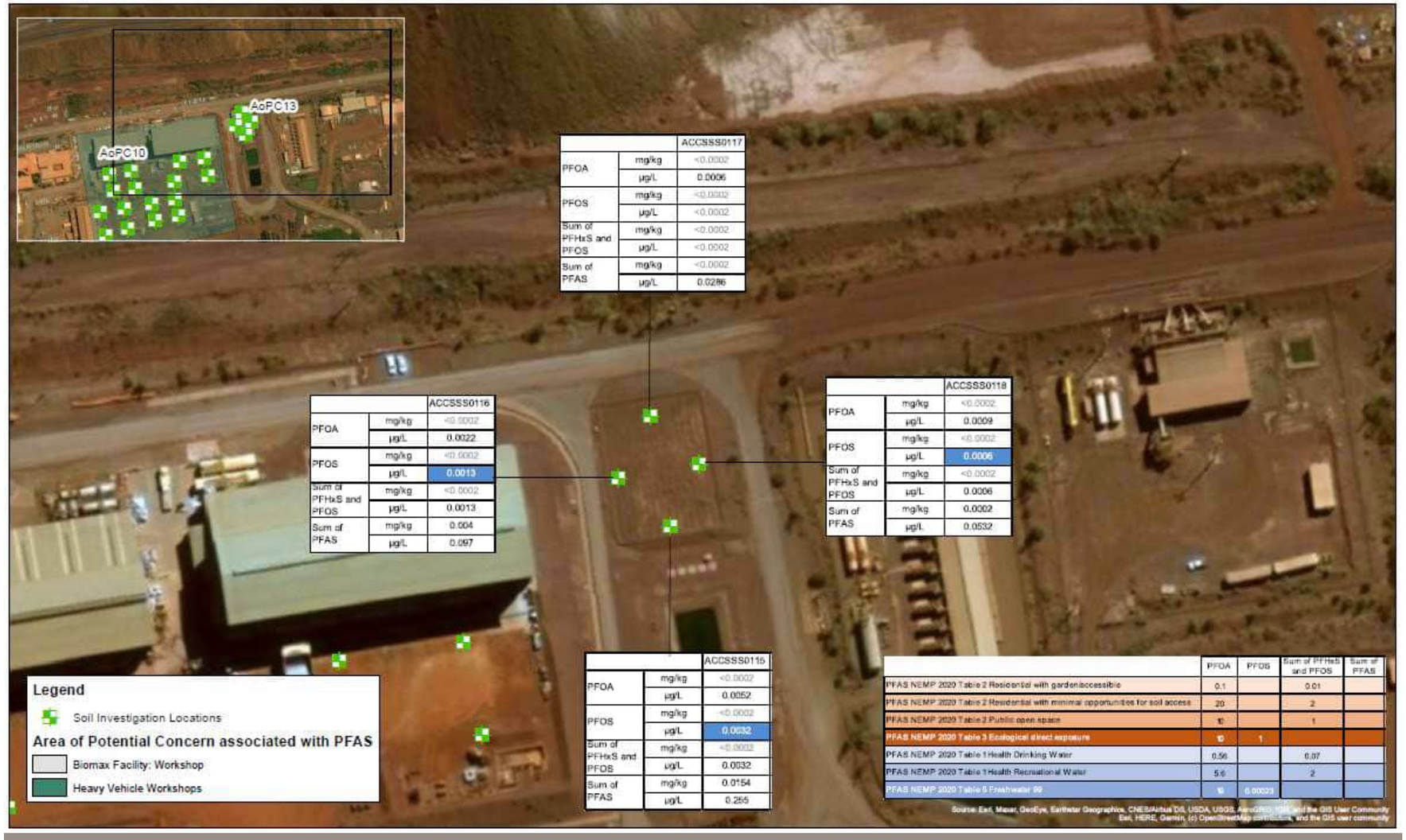
AoPC 13 (No BHP ID) - BioMax Facility Irrigation Area (Workshop)

Surface Soil

- PFOA was recorded below the laboratory LOR in all samples.
- PFOS was recorded below the laboratory LOR in all samples.
- Sum of PFAS concentrations were recorded above the laboratory LOR in three of the four samples, concentrations predominantly belonged to the Perfluoroalkyl Carboxylic Acid group.

Leachate

- PFOA was recorded above the laboratory LOR in all samples, all concentrations were below the adopted human health and ecological assessment criteria.
- Three of the four samples recorded a PFOS concentration above the 99% freshwater criteria.
- Sum of PFAS concentrations were recorded above the laboratory LOR in all samples, concentrations predominantly belonged to the Perfluoroalkyl Carboxylic Acid group.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	4	PFOA	<0.0002	<0.0002	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	0.0154	0.0021	-	-
Leachate (µg/L)	4	PFOA	0.0006	0.0052	0.00155	0	0
	4	PFOS	<0.0002	0.0032	0.00095	-	3
	4	PFOS + PFHxS	<0.0002	0.0032	0.00095	0	-
	4	Sum of PFAS	0.0286	0.255	0.0751	-	-

Table 11-21 AoPC 13 BioMax Facility Irrigation Area (Storage Yard) – Summary of PFAS Analysis

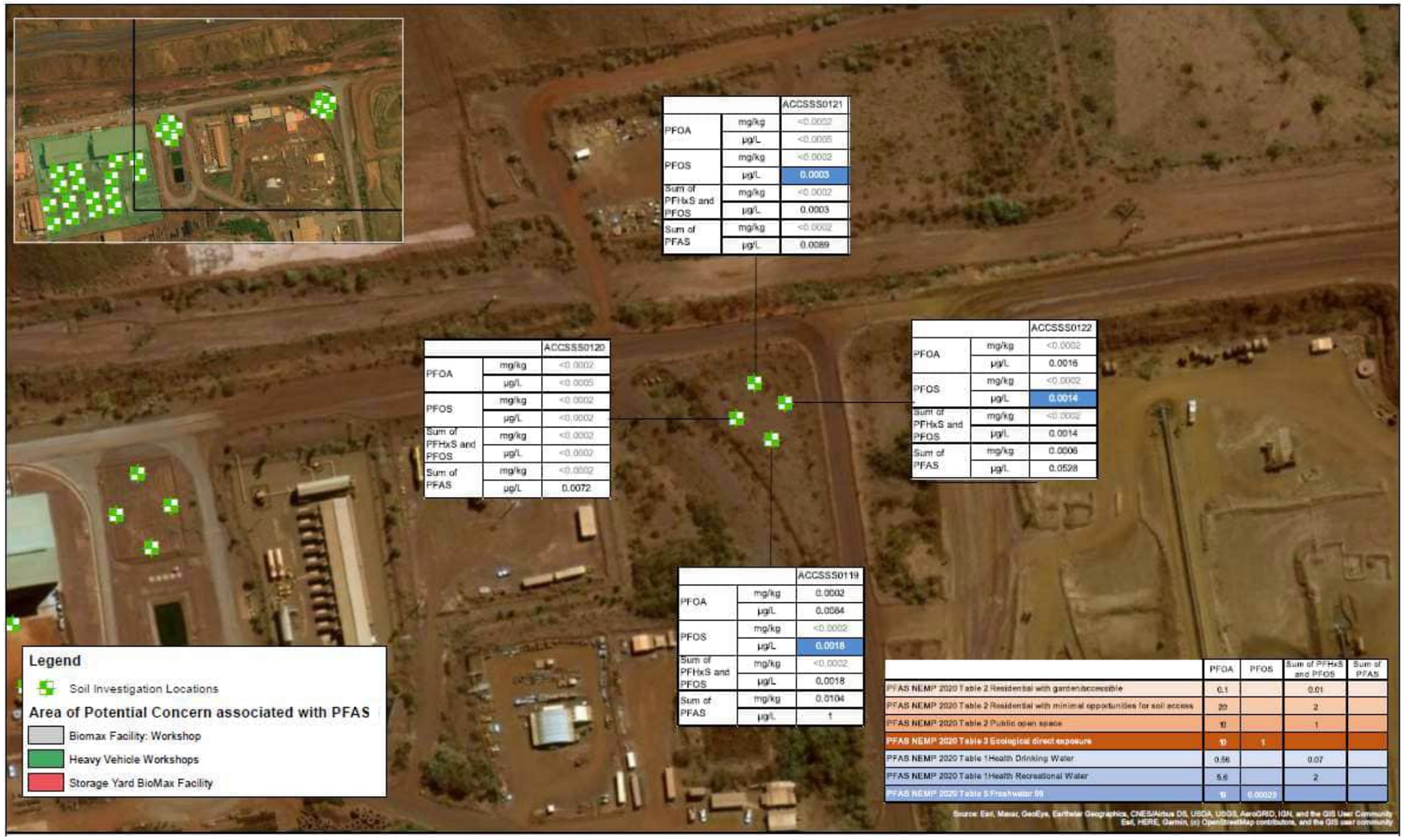
AoPC 13 (No BHP ID) - BioMax Facility Irrigation Area (Storage Yard)

Surface Soil

- PFOA was recorded above the laboratory LOR in one of the four samples, all concentrations were below the adopted human health and ecological assessment criteria.
- PFOS was recorded below the laboratory LOR in all samples.
- Sum of PFAS concentrations were recorded above the laboratory LOR in two of the four samples, concentrations predominantly belonged to the Perfluoroalkyl Carboxylic Acid group.

Leachate

- PFOA was recorded above the laboratory LOR in two of the four samples, all concentrations were below the adopted human health and ecological assessment criteria.
- Three of the four samples recorded a PFOS concentration above the 99% freshwater criteria.
- Sum of PFAS concentrations were recorded above the laboratory LOR in all samples, concentrations predominantly belonged to the Perfluoroalkyl Carboxylic Acid group.



Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Surface Soil (mg/kg)	4	PFOA	<0.0002	0.0002	0.0002	0	0
	4	PFOS	<0.0002	<0.0002	0.0002	-	0
	4	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	4	Sum of PFAS	<0.0002	0.0104	0.0004	-	-
Leachate (µg/L)	4	PFOA	<0.0005	0.0084	0.00105	0	0
	4	PFOS	<0.0002	0.0018	0.00085	-	3
	4	PFOS + PFHxS	<0.0002	0.0018	0.00085	0	-
	4	Sum of PFAS	0.0072	1	0.03085	-	-

11.3 Leachate

All surface soil and sediment samples were also submitted for deionised water leachate analysis.

- The results of the surface soil leachate analysis indicated that the sum of PFAS concentrations were recorded above the laboratory LOR (0.0002 µg/L) in 94 of the 98 samples analysed with concentrations ranging from 0.0004 – 103 µg/L, despite some areas recording surface soil concentrations below the laboratory LOR;
- The results of the sediment leachate analysis indicated that the sum of PFAS concentrations were recorded above the laboratory LOR (0.0002 µg/L) in 13 of the 21 samples analysed with concentrations above the LOR ranging from 0.0009 – 23.2 µg/L. At least one sample from all five AoPC recorded a leachate concentration above the 99% freshwater criteria for PFOS (0.00023 µg/L).

It is considered the detection of PFOS in the deionised water and not in the soil samples reflects the response of predominantly negatively charged nature of PFASs (such as PFOS) to more alkaline conditions. As pH increases, adsorbent surfaces tend to become more negatively charged (or less positively charged) leading to stronger electrostatic repulsion for anionic (negatively charged) PFASs (such as PFOS). However, it is also noted that the effects of pH on PFAS sorption are not fully understood, and further industry research is ongoing.

11.4 Groundwater

Groundwater analytical results are presented in Table 5, Appendix B. The laboratory reports, SRNs and CoC documentation are presented in Appendix K.

11.4.1 PFAS

The results of the groundwater sampling program indicate that only seven of the 32 samples collected recorded sum of PFAS concentrations above the laboratory LOR, with only two samples (PSA0598R and HGA0077P) recording a concentration of PFOS above the 99% freshwater criteria (0.00023 µg/L).

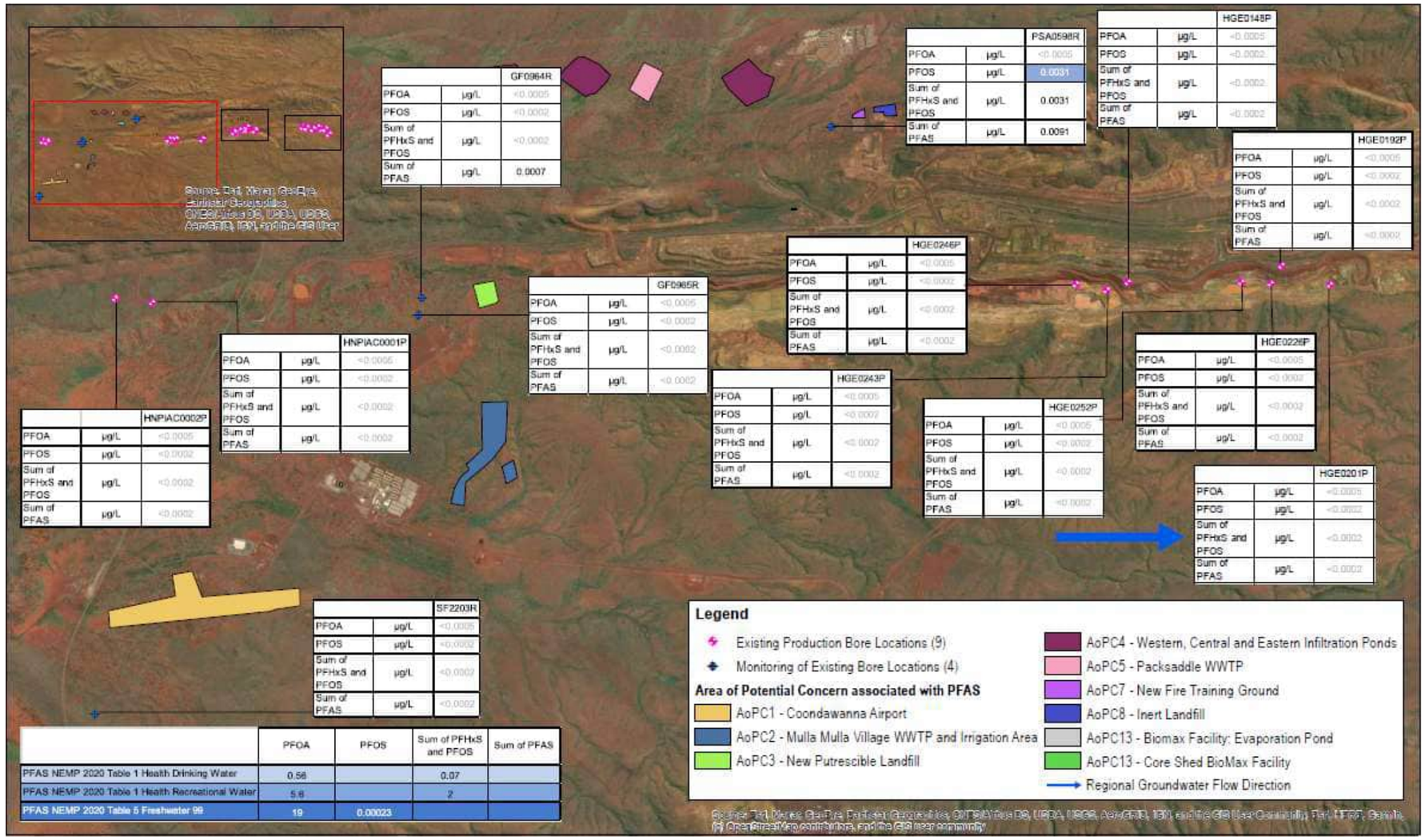
Groundwater monitoring bore PSA0598R is located approximately 300 m upgradient of the fire training area and is not considered to be located downgradient of an identified PFAS source area. Production bore HGA0077P is located approximately 500 m downgradient of the bioremediation farm, and 370 m downgradient of production bore HGA0074P that recorded a concentration of PFBA (0.002 µg/L) above the laboratory LOR.

It is considered that identified PFAS concentrations within the groundwater are currently not impacting identified receptors, however the current bore locations are not appropriately located downgradient of suspected source areas. A summary of the groundwater results and sampling locations are displayed in Table 11-22 to Table 11-24.

Table 11-22 Production Bores Area E and Groundwater Monitoring Bores – Summary of PFAS Analysis

Production Bores Area E and Groundwater Monitoring Bores

- All concentrations of PFOA were recorded below the laboratory LOR.
- One bore (PSA0598R) recorded a PFOS concentration above the 99% freshwater criteria.
- Sum of PFAS concentrations were recorded above the laboratory LOR in two samples, concentrations belonged to the Perfluoroalkyl Carboxylic Acid group.

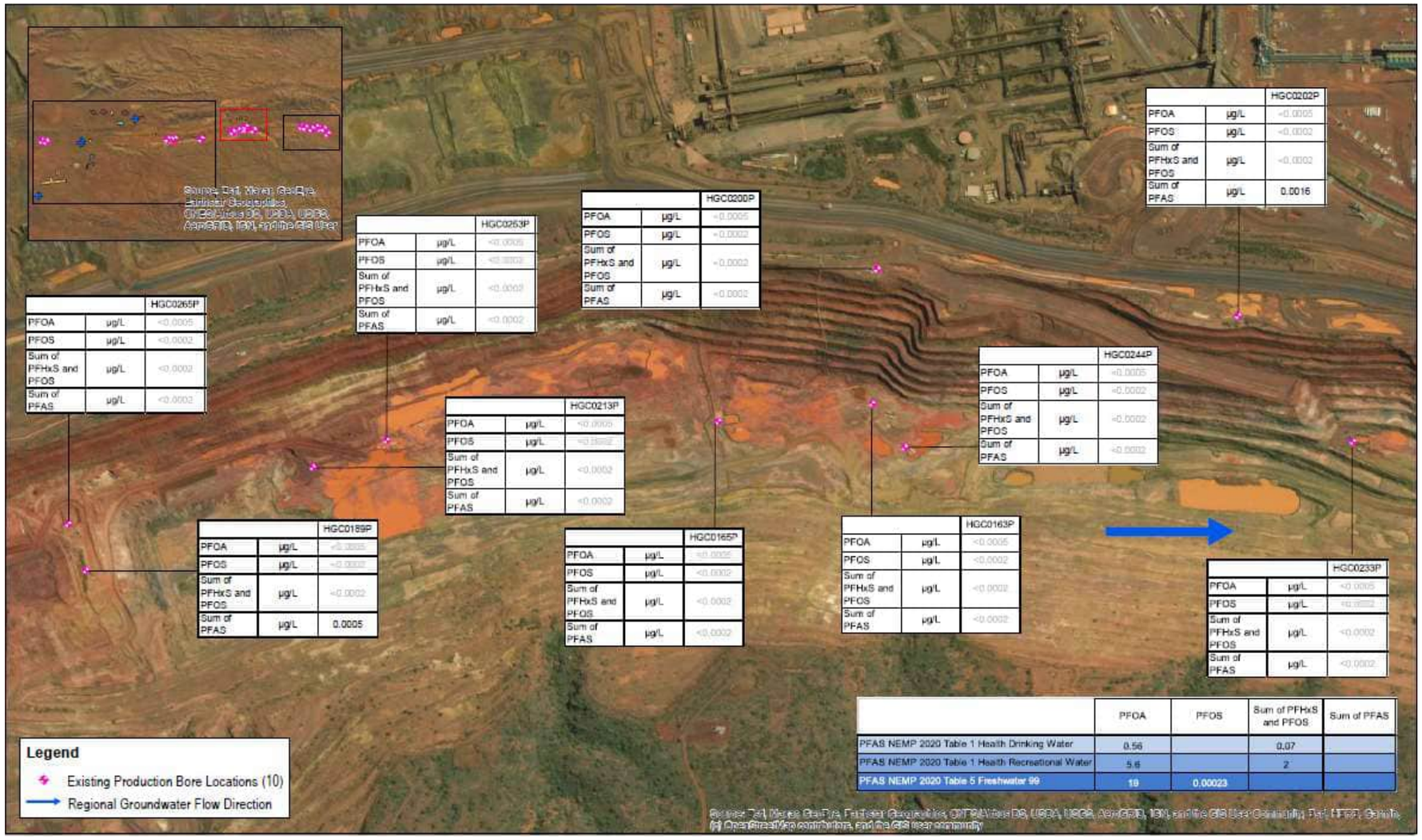


Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Groundwater Production Bore (µg/L)	13	PFOA	<0.0005	0.0005	0.0005	0	0
	13	PFOS	<0.0002	0.0031	0.0002	-	1
	13	PFOS + PFHxS	<0.0002	0.0031	0.0002	0	-
	13	Sum of PFAS	<0.0002	0.0091	0.00045	-	-

Table 11-23 Production Bores Area C – Summary of PFAS Analysis

Production Bores Area C

- All concentrations of PFOA were recorded below the laboratory LOR.
- All concentrations of PFOS were recorded below the laboratory LOR.
- Sum of PFAS concentrations were recorded above the laboratory LOR in two samples, concentrations belonged to the Perfluoroalkyl Carboxylic Acid group.

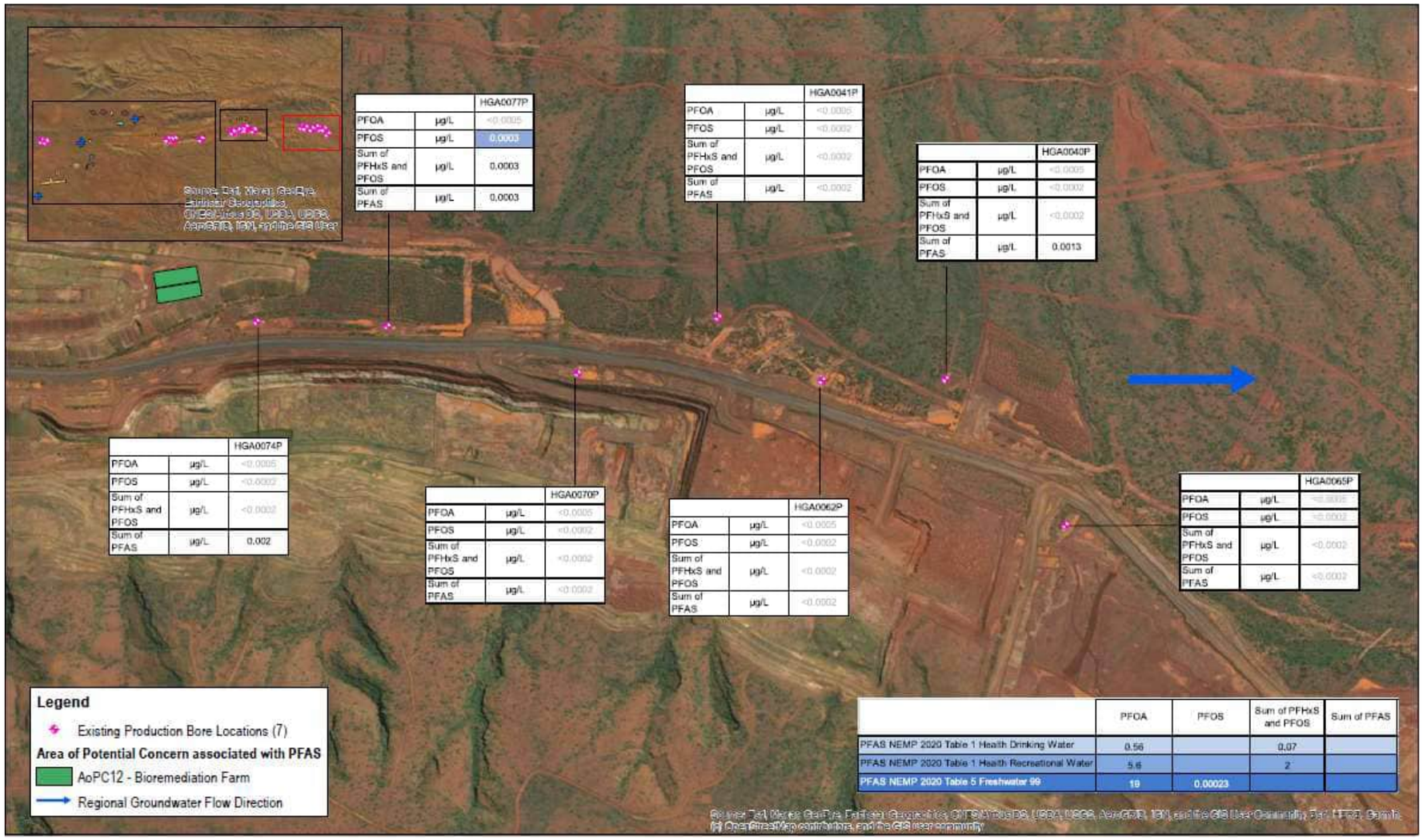


Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Groundwater Production Bore (µg/L)	10	PFOA	<0.0005	0.0005	0.0005	0	0
	10	PFOS	<0.0002	<0.0002	0.0002	-	0
	10	PFOS + PFHxS	<0.0002	<0.0002	0.0002	0	-
	10	Sum of PFAS	<0.0002	0.0016	0.0002	-	-

Table 11-24 Production Bores Area A – Summary of PFAS Analysis

Production Bores Area A

- All concentrations of PFOA were recorded below the laboratory LOR
- One bore (HGA0077) recorded a PFOS concentration above the 99% freshwater criteria.
- Sum of PFAS concentrations were recorded above the laboratory LOR in three samples, concentrations belonged to the Perfluoroalkyl Carboxylic Acid group

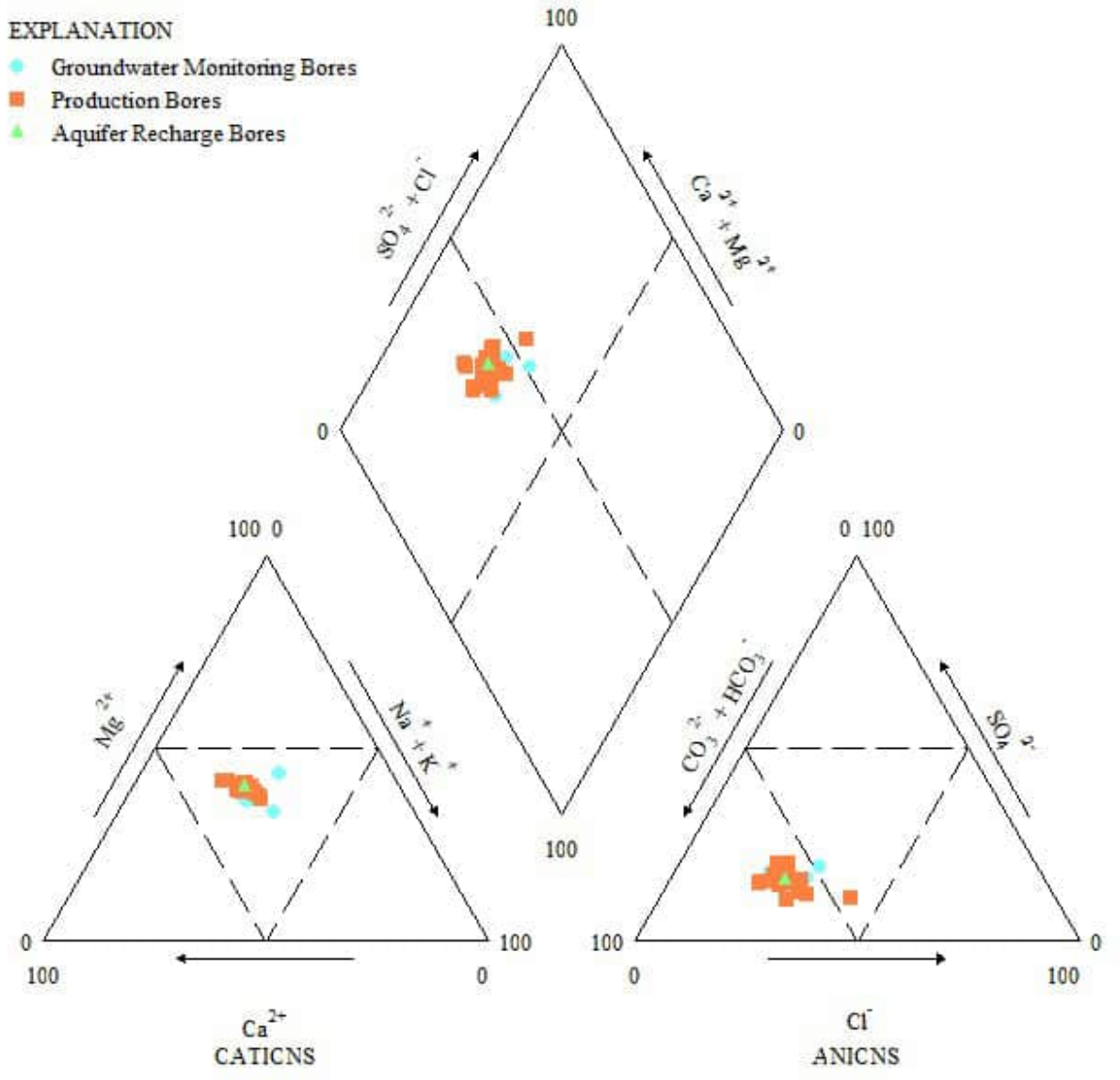


Sample Type	No. of Samples	Analyte	Minimum	Maximum	Median	No. of Concentrations Above Adopted Human Health Criteria	No. of Concentrations Above Adopted Ecological Criteria
Groundwater Production Bore (µg/L)	7	PFOA	<0.0005	0.0005	0.0005	0	0
	7	PFOS	<0.0002	0.0003	0.0002	-	1
	7	PFOS + PFHxS	<0.0002	0.0003	0.0002	0	-
	7	Sum of PFAS	<0.0002	0.002	0.0002	-	-

11.4.2 Major Anions and Cations

Major anions and cations have been charted on a piper diagram in Figure 11-1 for the groundwater samples collected at the Site. A Piper Plot is a graphical representation of groundwater major-ion chemistry allowing for grouping of water samples according to geochemical facies. A plot of data from multiple bores enables comparison of sample chemistries and informs on respective (hydro-chemical) 'type' of groundwater represented at each bore and can assist to identify whether there are different groundwater domains represented.

Figure 11-1 Piper Diagram All Bores



The anion and cation concentrations for all of the bores across the Site indicate a predominantly magnesium bicarbonate chemistry. The general grouping of the plotted chemistries for the bores indicates samples are representative of groundwater of predominantly the same domain and supports a conclusion that the groundwater monitoring bore and production bores are located within the same aquifer with no definitive differences between the piper plots.

12 Regulated and Unregulated PFAS Compounds

An assessment of the regulated and unregulated PFAS compounds for AoPC was undertaken to determine the composition of the PFAS concentrations. Assessment of the concentrations in the various media belonged to the following groups:

- Perfluoroalkyl Sulfonic Acids;
- Perfluoroalkyl Carboxylic Acids; and
- Fluorotelomer Sulfonic Acids.

The results of the preliminary PFAS assessment indicate that there are five main source areas across the Site, namely:

- AoPC 1 (AC-16) - Coondawanna Airport;
- AoPC 7 (No BHP ID) - New Firefighting Training Ground;
- AoPC 9 (AC-22) - MAC Medical Centre;
- AoPC 10 (AC-09) - Heavy Vehicle Workshops; and
- AoPC 12 (AC-03) - Bioremediation Farm.

An assessment of the regulated and unregulated PFAS compounds for the AoPC indicated above was undertaken to assess the composition of the PFAS concentrations, it is noted that only PFAS compounds that recorded concentrations above the laboratory LOR have been assessed and presented in Appendix L.

Table 12-1 displays a summary of the composition of the highest PFAS compounds for each of the five areas that are considered the main PFAS source areas.

Table 12-1 PFAS Composition

AoPC	Sample Type	Sample Name	PFOS	PFOS & PFHxS	PFOA	6:2 FTS	8:2 FTS	Sum of PFAS
AoPC 1 - Coondawanna Airport	Surface soil Leachate	ACCSSS0015	0.0007	0.0013	0.224	16.4	0.088	17
AoPC 7 - New firefighting training ground	Surface Soil Leachate	ACCSSS0052	0.0013	0.0013	0.0632	0.676	0.479	1.45
		ACCSSS0053	0.0005	0.0005	0.145	0.72	0.208	1.37
		ACCSSS0055	0.0014	0.0014	0.0271	1.6	0.104	1.83
AoPC 9 – MAC Medical Centre	Surface Soil Leachate	ACCSSS0060	<0.0002	<0.0002	1.51	22.3	0.276	24.6
AoPC 10 - Heavy Vehicle Workshop	Surface Soil Leachate	ACCSSS0067	0.0097	0.0125	0.0209	8.05	0.32	103[1]
AoPC 10 - Heavy Vehicle Workshop Evaporation Ponds	Surface Water	ACCSSW0019	<0.0002	<0.0002	0.0036	6.01	0.011	14.1
		ACCSSW0020	<0.0002	<0.0002	0.0037	1.34	0.010	8.28
AoPC 12 - Bioremediation Farm	Surface Water	ACCSSW0023	0.0726	0.0726	0.440	338	1.31	353

[1] A concentration of 93.3 µg/l for PFHxA was recorded in the leachate sample from this location

13 Revised Areas of Potential Concern

Prior to the commencement of the field assessment each AoPC was rated in accordance with its considered PFAS risk, as presented in Table 3-3. The rating of each AoPC has been revised on completion of the assessment to reflect the nature of the residual data gap and priority for further investigation, as presented in Table 13-2. The basis of the rating is presented in Table 13-1.

Table 13-1 Risk Rating

Residual Data Gap Rating	Criteria
Low	AoPC has recorded PFAS concentrations in soil, surface water, sediment and/or groundwater below the laboratory LOR and is considered to a minor source of PFAS
Medium	AoPC has recorded PFAS concentrations in soil, surface water, sediment and/or groundwater above the laboratory LOR and is considered to a minor source of PFAS
High	AoPC has recorded PFAS concentrations in soil, surface water, sediment and/or groundwater above the laboratory LOR and/or adopted human health assessment criteria and is considered to present an ongoing source of PFAS

Table 13-2 Areas of Potential Concern Risk Rating

AoPC	BHP WAIO ID	Description	Residual Rating	Media Analysed			Summary/Comment
				Soil	GW	SW / Sediment	
AoPC 1	AC-16	Coondawanna Airport	High	✓	✗	✗	The airport is located at the western extent of the Site, with the airport apron utilised, both historically and currently, for fire training exercises utilising foams. The foam historically utilised during fire training exercises consisted of FireAde 3%, that has subsequently been replaced with a fluorine-free foam (Solberg 3%). The airport apron consists of an asphalted area covering approximately 28,000 m^2, with the surrounding area consisting of compacted gravel and surrounded by native vegetation. All discharged liquids would flow from the apron to the surrounding area and infiltrate into the soil. Figure 11, Appendix A shows the identified lateral extent of PFAS in soil at the near-surface. All total PFAS concentrations were recorded below the adopted human health and ecological assessment criteria, however, all leachate samples, with the exception of ASCSSS0016 located in the northwest of the apron, recorded a PFOS concentration above the adopted ecological assessment criteria. Sum of PFAS leachate concentrations across the area ranged from 0.0018 to 17 µg/L As presented in Appendix L the results indicate that the highest concentration of sum of PFAS was recorded in ACCSSS0015 located to the northwest of the airport apron, where it is reported training exercises utilising foams has been undertaken. The composition of the PFAS concentrations within the total soil results comprise predominantly of unregulated compounds of the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups. However, it is noted that there is no discernible composition of the sum of PFAS concentrations around the apron with the percentage of the PFAS groups varying per sample, this is particularly evident within the leachate groups where low concentrations of Perfluoroalkyl Sulfonic Acids including PFOS leached from the surface soils from samples located to the south of the apron. Based on the concentrations recorded and nature of the potential impacts the risk of this area has not been revised and residual data gaps remain as presented in Table 14-2.
AoPC 2	Not allocated a contaminated site ID	Mulla Mulla Village WWTP and Irrigation Area	Low	✓	✗	✓	All surface soil concentrations were recorded below the laboratory LOR and adopted human health and ecological assessment criteria. Concentrations of leachate were recorded above the laboratory LOR for Perfluoroalkyl Carboxylic and Perfluoroalkyl Sulfonic Acids, with PFOS recording concentrations above the 99% freshwater criteria within 10 of the 23 samples analysed. Based on the concentrations recorded and nature of the potential impacts this area is considered to pose a low risk.
AoPC 3	Not allocated a contaminated site ID	New Putrescible Landfill	Low	✓	✓	✗	All surface soil concentrations were recorded below the laboratory LOR and adopted human health and ecological assessment criteria. Concentrations of leachate were recorded above the laboratory LOR for Perfluoroalkyl Carboxylic and Perfluoroalkyl Sulfonic Acids, with PFOS recording concentrations above the 99% freshwater criteria within 10 of the 23 samples analysed. Groundwater sampled in bores located up-gradient of the AoPC recorded sum of PFAS concentrations below the laboratory LOR. Based on the concentrations recorded and nature of the potential impacts this area is considered to pose a low risk.
AoPC 4	Not allocated a contaminated site ID	Western, Central and Eastern Infiltration Ponds (storage/infiltration/discharge of mine dewatering operations)	Low	✗	✗	✓	Concentrations of PFAS in surface water were recorded below the laboratory LOR in samples from the Western, Central and Eastern Infiltration Ponds and discharge creeks, with the exception of a single concentration of Perfluorononanoic acid (0.0007 µg/L), slightly above the LOR (0.0005 µg/L). Concentrations for the Sum of PFAS were recorded below the laboratory LOR in samples from the Western, Central and Eastern Infiltration Ponds and discharge creeks. Sediment leachate samples in the Eastern Infiltration Ponds, including the discharge point, and two samples collected from the creek recorded PFOS above Freshwater 99% for PFOS (0.00023 µg/L). The AoPC is considered to pose a low risk in regards to a potential source of PFAS, however, it is noted that abstracted groundwater from the operations is discharged to the infiltration ponds.
AoPC 5	AC-12	Packsaddle WWTP	Low	✗	✗	✓	All sediment concentrations were recorded below the adopted human health and ecological assessment criteria, a single sum of PFAS concentration was recorded above the laboratory in a sample collected from the emergency fire water pond, that was lined. All sum of PFAS leachate concentrations were recorded above the laboratory LOR, with a single PFOS concentration recorded above the 99% freshwater criteria. Within the surface water concentrations of PFOA were recorded above the laboratory LOR in all samples, but below adopted human health and ecological assessment criteria, with concentrations of PFOS recorded below the laboratory LOR. Based on the concentrations recorded and nature of the potential impacts this area is considered to pose a low risk.
AoPC 6	AC-05	Historical Putrescible Landfill	Low	✓	✗	✗	This area was unable to be sampled during the field assessment, however, based on the nature of the impacts within the new putrescible landfill this AoPC is considered to pose a low risk.
AoPC 7	Not allocated a contaminated site ID	New Firefighting Training Ground	High	✓	✗	✗	Figure 16, Appendix A shows the identified lateral extent of PFAS in soil at the near-surface. All total PFAS concentrations were recorded below the adopted human health and ecological assessment criteria, however, all leachate samples recorded a PFOS concentration above the adopted ecological assessment criteria. Leachate concentrations across the area were comparable with sum of PFAS concentrations ranging from 0.477 to 1.83 µg/L. As presented in Appendix L the results indicate that the highest concentration of sum of PFAS was recorded in ACCSSS0055 located at the eastern extent of the area, noting that the area slopes to the east. The composition of the PFAS concentrations within both the total soil results and leachate comprise predominantly of the unregulated Fluorotelomer Sulfonic Acid group, with the composition of the total surface soils and leachate results indicating up to approximately 95% of unregulated compounds associated with the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups. It is noted that concentrations of Perfluoroalkyl Sulfonic Acid compounds within the leachate, including PFOS, contribute a minimal percentage to the sum of PFAS concentration.

AoPC	BHP WAIO ID	Description	Residual Rating	Media Analysed			Summary/Comment
				Soil	GW	SW / Sediment	
AoPC 8	Not allocated a contaminated site ID	Inert Landfill	Low	✓	×	×	Surface soil samples recorded concentrations below the laboratory LOR and adopted human health and ecological assessment criteria, with the leachate recording PFOS concentrations above the 99% freshwater criteria were recorded in both samples. Based on the concentrations recorded and nature of the potential impacts this area is considered to pose a low risk.
AoPC 9	AC-22	MAC Medical Centre (emergency vehicle washdown area)	High	✓	×	×	The sum of PFAS concentrations varied significantly across the area with total concentrations ranging from 0.0086 mg/kg to 0.56 mg/kg, and leachate concentrations ranging from 0.154 µg/L to 24.6 µg/L. The highest sum of PFAS concentration were located immediately to the west of the concrete pad on which the vehicles are parked, however, it is noted that the remaining samples collected adjacent to the concrete pad recorded concentrations two orders of magnitude lower. Samples were also collected at the base of on an incline that is located to the west and south of the pad, it is considered based on the topography of the area that any surface runoff from the pad would flow to the west. The total and leachate sum of PFAS concentrations within the four samples from the base of the incline recorded comparable concentrations, ranging from 0.122 mg/kg to 0.218 mg/kg and 3.62 µg/L and 5.29 µg/L, respectively. The composition of sum of PFAS concentrations in the surface soils predominantly belonged to the unregulated Fluorotelomer Sulfonic Acids group. The leachate results recorded PFOA concentrations across the area above the laboratory LOR in all samples with a single concentration (1.51 µg/L) recorded above the drinking water guideline (0.56 µg/L). PFOS concentrations were recorded above the 99% freshwater criteria in five of the nine samples analysed. The PFAS compounds that reported the highest concentrations across the area belonged to the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups. The composition of the sum of PFAS results within the vicinity of the MAC Medical Centre are reasonably consistent, with the composition of the total surface soils and leachate results indicating approximately 5 – 35% Perfluoroalkyl Carboxylic Acid and unregulated 65 - 95% Fluorotelomer Sulfonic Acid Based on the concentrations recorded and nature of the potential impacts this area is considered to remain a high potential risk area which requires further investigation to address the residual data gaps as presented in Table 14-2.
AoPC 10	AC-09	Heavy Vehicle Workshops	High	✓	×	✓	The highest total sum of PFAS concentration (1.07 mg/kg) was recorded at the entrance of Bay 18, at the eastern extent of the workshop area. All total soil concentrations were recorded below the adopted human health and ecological assessment criteria, however, all sum of PFAS concentrations were recorded above the laboratory LOR in all samples collected, ranging from 0.0294 to 1.07 mg/kg. Leachate PFOA concentrations were recorded above the laboratory LOR in all samples, but below the adopted human health and ecological assessment criteria. A total of seven of the 16 samples across the HV workshop area recorded a PFOS concentration above the 99% freshwater criteria, with the highest leachate sum of PFAS concentration located at the entrance of Bay 7 of the central workshop. Sum of PFAS leachate concentrations across the area ranged from 0.575 to 103 µg/L It is noted that the composition of the surface soil sum of PFAS results across the workshop area are reasonably consistent, with the composition of the total surface soils recording 80 - 99% unregulated Fluorotelomer Sulfonic Acids. However, it is noted that that the composition of the leachate result in sample ASCSSS0067 comprises predominantly of PFHxA, whilst present in the surface soil sample is more prominent in the leachate sample. Based on the concentrations recorded and nature of the potential impacts this area is considered to remain a high potential risk area which requires further investigation to address the residual data gaps as presented in Table 14-2.
AoPC 11	AC-10 and AC-11	New and Old Washdown Bays and Evaporation Ponds	Medium	×	×	✓	Surface soils recorded concentrations below the adopted human health and ecological assessment criteria, however, samples recorded sum of PFAS concentrations above the laboratory LOR, with all leachate analysis also recording concentrations above the laboratory LOR. Sediment and surface water samples collected from the evaporation ponds recorded sum of PFAS concentrations above the laboratory LOR. It is noted that the ponds are lined, however, the concentrations within the surface soils surrounding the ponds indicates that historically the ponds may have overflown. It is considered that this AoPC is receptor of impacted water generated during the washing of HV's prior to maintenance. It is understood that the sediment from the washdown bays is transferred to the bioremediation farm (AoPC 12).
AoPC 12	AC-03	Bioremediation Farm	High	×	✓	✓	The highest individual PFAS concentration was 0.0572 mg/kg, relating to unregulated compound PFPeA which is commonly associated with stain and grease proof coatings on food packing, couches and carpets. Within the leachate sample, concentrations of unregulated Perfluoroalkyl Carboxylic Acids and Fluorotelomer Sulfonic Acid compounds were recorded above the laboratory LOR, with the PFOS concentration also recorded above the 99% freshwater criteria. The composition of the surface water sample indicates the sum of PFAS concentration is predominantly comprised of 6:2 FTS. The water within the wet cell is sourced from OWS from across the Site including the Workshop OWS. Leachate concentrations indicated: > PFOA was recorded above the laboratory LOR, but below the adopted human health and ecological assessment criteria; > A concentration of PFOS (0.0726 µg/L) was recorded above the 99% freshwater criteria; > The sum of PFHxS and PFOS was recorded above the adopted human health assessment criteria (Drinking Water 0.07 µg/L); and > A concentration of 338 µg/L of 6:2 FTS was recorded. As per the sample collected from the dry cell, only a single sample was collected from the cell and it is considered that the composition of the water within the cell may vary over time dependent on on-site activities and source of the water. Based on the concentrations recorded and nature of the potential impacts this area is considered to remain a high potential risk area which requires further investigation to address the residual data gaps as presented in Table 14-2.

AoPC	BHP WAIO ID	Description	Residual Rating	Media Analysed			Summary/Comment
				Soil	GW	SW / Sediment	
AoPC 13	AC18. The remaining BioMax Facilities have not been allocated an AC number	BioMax Facility Irrigation Areas – A total of four individual facilities	Low	✓	×	×	Surface soil concentrations recorded each of the BioMax Facility irrigation area recorded concentrations below the laboratory LOR and adopted human health and ecological assessment criteria. The leachate samples recorded PFOS concentrations predominantly above the 99% freshwater criteria, however, it is considered based on the concentrations recorded and nature of the potential impacts this area is considered to pose a low risk.

14 Refined Conceptual Site Model

To assist in the understanding of the Site and risks posed to receptors, the preliminary CSM that was developed has been updated based upon the findings of the investigation. A CSM is a representation of Site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors (NEPC 1999).

The CSM provides the framework for identifying how a site can become contaminated and how potential receptors may be exposed to contamination either in the present or in the future i.e. it enables an assessment of the potential S-P-R linkages, and facilitates identification of a suitable investigation, management or remediation strategy for the Site.

As discussed in Section 7.4, the sampling design for the investigation aimed to characterise the presence of PFAS at identified sources, pathways and receptors. A discussion on the identified nature, extent and magnitude of impact is presented as follows. The graphical CSM is presented as Figure 27, Appendix A.

14.1 Sources

Following the completion of the document review and site inspection, a total of 13 AoPC were identified, incorporating BHP WAIO registered contamination areas and sites identified during the Cardno site inspection that had the potential for PFAS to be a source of PFAS due to current or historical activities as discussed in Section 3.

These areas have been investigated and the results indicate that there are five potential source areas where PFAS is present, namely:

- AoPC 1 (AC-16) - Coondawanna Airport;
- AoPC 7 (No BHP ID) - New Firefighting Training Ground;
- AoPC 9 (AC-22) - MAC Medical Centre;
- AoPC 10 (AC-09) - Heavy Vehicle Workshops; and
- AoPC 12 (AC-03) - Bioremediation Farm.

PFAS was identified within surface soil, surface water or sediment at each of these AoPC (as detailed in Table 13-2), including concentrations that exceed the relevant adopted assessment criteria.

14.2 Transport Pathways

14.2.1 Surface Water Migration

There are three identified key hydrological receptors in the vicinity of MAC:

- Coondewanna Flats located approximately 18 km to the southwest, significant for the occurrence of the Coolibah-Lignum Flats Priority Ecological Community (PEC);
- Weeli Wolli Spring located approximately 14 km to the east, significant for the occurrence of the Weeli Wolli Spring PEC; and
- Ben's Oasis located approximately 15 km southeast and 15 km south of Weeli Wolli Spring (on Rio Tinto tenure), significant for the occurrence of the Weeli Wolli Spring PEC.

It is noted that concentrations of sum of PFAS was recorded above the laboratory LOR in samples collected from A Deposit, with a single concentration above the PFAS freshwater assessment criteria. Site personnel indicated that the infiltration ponds have been known to overflow in significant rainfall periods, discharging to adjacent creeks and waterways that eventually flow into Coondewanna Flats.

14.2.2 Groundwater Migration

14.2.2.1 Vertical Migration to Groundwater

Leaching of PFAS from surface soils appears to be occurring within the identified PFAS source areas, leachable sum of PFAS concentrations were recorded above the laboratory LOR in 94 of the 98 samples analysed (0.0004 – 103 µg/L) indicating that the impacted soil could be acting as an ongoing secondary source of groundwater impact.

The highest sum of PFAS concentration was recorded at the HV Workshop, with a concentration of PFHxA 93.3 µg/L recorded. In addition, a single concentration (1.51 µg/L) from the MAC Medical Centre for PFOA was recorded above the drinking water guideline (0.56 µg/L).

It is noted that only surface soil samples were collected across the Site and research has indicated that due to the high-water solubility of PFAS, migration of PFAS through a soil column is highly likely and subsurface PFAS mass may be masked by lower PFAS concentrations in leached/weathered soils at the surface. It is understood that surficial soils may not reflect the magnitude of deeper soil impacts and potential PFAS mass. Due to the lack of available suitable groundwater monitoring bores in the vicinity of these potential source areas the deeper impacts to soil or groundwater is currently unknown.

14.2.2.2 Migration On-site

Sum of PFAS was recorded above the laboratory LOR in seven of the 28 samples collected from the groundwater monitoring and production bores, with two concentrations recorded above the 99% freshwater criteria for PFOS (0.00023 µg/L) in groundwater monitoring bore PSA0598R and production bore HGA0077.

It is noted that groundwater generally flows across the catchment from west to east and the groundwater assessment during the investigation was limited to existing groundwater monitoring bores and active production bores. It is acknowledged that the bores were not originally installed for environmental monitoring purposes and so do not meet the requirements of a contaminated sites monitoring bore (DER 2014), however, were considered suitable to provide indicative groundwater quality across the site as whole during this stage of investigation. Notwithstanding, the site is subject to active dewatering and discharge (i.e. Juna downs MAR and packsaddle infiltration ponds) and so there is likely the potential for localised groundwater flow against regional gradients.

14.2.2.3 Migration Off-site East

A total of five additional production bores, that are considered down-gradient of HGA0077, were sampled during the assessment. Four of the five bores recorded a sum of PFAS concentration below the laboratory LOR, with HGA0040 recording a sum of PFAS concentration of 0.0013 µg/L, noting that regulated compounds PFOA and PFOS were recorded below the laboratory LOR.

It is noted that groundwater levels within the production bores is not monitored across the Site, however, Table 14-1 provides details of the production bores down-gradient of all AoPC's and bore HGA0077.

Table 14-1 Down-gradient Production Bore Details

Bore Name	Location	Surface Level	Hole Depth (m BGL)	Top of Screen (m BGL)	Base of Screen (m BGL)
HGA0040P	A Deposit	633.881	157	117.3	153.8
HGA0041P	A Deposit	636.715	138.3	65.1	131.6
HGA0062P	A Deposit	632.454	190	56	182
HGA0065P	A Deposit	628.844	180	58	166
HGA0070P	A Deposit	635.648	190	79	187
HGA0074P	A Deposit	642.217	202	118	202
HGA0077P	A Deposit	640.1	200	116	200

It is considered that the bores located down-gradient of HGA0077 are screened within the same aquifer.

14.2.2.4 Migration Off-site West

As indicated the mechanism of potentially impacted groundwater migrating from the Site to the west is via the MAR in Juna Downs. During the groundwater assessment two bores HGSL0014 and HGSL0038 were sampled. Both bores recorded sum of PFAS concentrations below the laboratory LOR.

The AAR indicated that upgradient regional bores west of MAC operations towards Coondewanna Flats suggests that the historical of gradual declining trend has reversed. From March 2019, there is a noticeable increase in water levels in the majority monitoring bores in the Coondewanna Flats PEC area and this is attributed to the commencement of surplus water injection at the Juna Downs MAR Borefield in addition to seasonal rainfall recharge.

14.2.3 Airbourne Migration

Wind dispersion of PFAS impacted soil is still considered as a potential active migration pathway given that the source areas where elevated near-surface soil impacts were identified are generally unsealed. However, it is noted this pathway is minimal on the basis that dust suppression is undertaken across the Site and levels of exposure through dust inhalation are typically orders of magnitude lower than oral ingestion of impacted soil or water (CRC CARE 2017). Additionally, no environmental or human health criteria were identified in surface soil or sediment samples collected as part of this investigation.

14.3 Exposure Rates

14.3.1 Human Health Exposure Routes

Based upon the identified PFAS sources and transport pathways, it is considered that human receptors across the Site may be exposed to PFAS by the following exposure routes:

- Incidental ingestion of impacted soils and sediments;
- Incidental ingestion of impacted surface water;
- Incidental ingestion of impacted groundwater; and
- Direct consumption of impacted groundwater.

Direct contact with impacted soil resulting in dermal absorption of PFAS through the skin is not considered to be an active exposure pathway. Studies have shown that under normal pH conditions, the potential for dermal exposure of PFAS is limited and that dermal adsorption will not significantly contribute to the level of risk posed (CRC CARE 2017).

It is noted that incidental ingestion of groundwater on-site is considered limited to personnel or contractors during dust suppression activities.

14.3.2 Ecological Exposure Routes

Ecological receptors across the Site may be exposed to PFAS by the following exposure routes:

- Direct contact and uptake of impacted soil and sediment;
- Direct contact, uptake or ingestion of impacted surface water; and
- Direct consumption of flora and fauna that is impacted from exposure to impacted soil, sediment, surface water and/or groundwater.

14.4 Receptors

14.4.1 Human Health Receptors

Based upon the identified PFAS sources, transport pathways and exposure pathways, and the results of the preliminary assessment, the following human receptors may be exposed to PFAS:

- Site personnel or contractors who work at the Site on a daily basis and may be exposed to soil, sediment, surface water or groundwater containing PFAS;
- People at off-Site properties/sites, to the west and east, who may directly consume impacted groundwater;
- People at off-Site properties/sites, to the west and east, who may incidentally orally ingest impacted groundwater when using groundwater for non-potable purposes (e.g. showering, washing dishes);
- People to the west of the Site who may be exposed to or accidentally ingest PFAS surface water if using ephemeral creeks for recreational activities (e.g. swimming or fishing).

14.4.2 Ecological Receptors

The following ecological receptors may be exposed to PFAS across the Site:

- Terrestrial biota (flora and fauna) within Source Areas that may uptake or be directly or indirectly exposed to PFAS in soil and groundwater, including:
  - Grasses and other flora;
  - Lower order fauna such as earthworms and insects;

  - Higher order animals such as birds, rabbits and native marsupials.
- Birds foraging within source areas that may uptake or be directly exposed to PFAS in soil and pooled surface water;
- Aquatic biota of ephemeral creeks, including:
  - Aquatic flora and lower order fauna that may uptake PFAS from impacted sediments; or be directly exposed to surface water containing PFAS;
  - Higher order consumers of impacted surface water, flora and lower order fauna;

14.5 Refined CSM and Qualitative Risk Assessment

Table 14-2 presents the identified potentially complete exposure pathways for each media. The table includes a qualitative assessment of the level of risk posed to the receptors associated with each potentially complete exposure pathway and a conclusion on whether or not the exposure pathway is complete (i.e. if exposure is actually expected to occur) based upon the qualitative risk assessment.

Table 14-2 Potential Pollutant Linkages for Human Health and Environmental Receptors

Impacted Media	Exposure Routes	Receptors	Qualitative Risk Assessment	SPR Linkage (Risk)	Data Gap
Soil	Incidental ingestion of impacted soils	Human - On-site workers	AoPC 1, 7, 9 and 10 - All surface soils recorded PFAS concentrations below the adopted human health criteria. However, it is noted that the composition of the PFAS concentrations within the total soil results comprise predominantly of the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups, of which there is currently no established human health assessment criteria. On this basis, this pathway is considered to present a potential, albeit low, risk of exposure to on-site workers. This risk is could be mitigated by material management procedures.	Potentially Complete (Low Risk)	Investigation of soils at depth across the AoPC to assess subsurface PFAS mass.
			AoPC 2, 3, 8 and 13 – Surface soil samples were collected across these AoPC, with no detection of PFAS compounds.	Incomplete	N/A
			AoPC 4, 5, 6, 11, 12 – AoPC not identified as a source of surface soil impact.	Incomplete	N/A
	Direct contact and uptake of impacted soil	Ecological – Terrestrial biota	AoPC 1, 7, 9 and 10 - PFAS has been detected in the near-surface soils of these areas however, there are currently no Australian regulatory endorsed ecology-based soil assessment levels, with the human health screening value for public open space currently used as an interim value. The impacted areas are unsealed and easily accessible to terrestrial ecology.	Complete (Medium Risk)	Investigation of soils at depth across the AoPC to assess subsurface PFAS mass
			AoPC 2, 3, 8 and 13 – Surface soil samples were collected across these AoPC, with no detection of PFAS compounds.	Incomplete	N/A
			AoPC 4, 5, 6, 11, 12 – AoPC not identified as a source of surface soil impact.	Incomplete	N/A
Groundwater	Incidental ingestion of impacted groundwater	Human - On-site workers	Potable water for the Site is abstracted from bores located in Juna Downs, concentrations recorded during this investigation were recorded below the laboratory LOR, however, it is noted that concentrations within samples historically collected by BHP WAIO have recorded concentrations above the laboratory LOR, therefore this pathway is considered to present a potential risk of exposure to on-site workers. Water abstracted across the Site is also utilised for dust suppression, further investigation required as groundwater results are not delineated, although the risk is considered low	Potentially Complete (Low Risk)	Installation of groundwater monitoring bores down-gradient of the AoPC to assess potential groundwater impacts migrating from the area to the east.
		Human - Off-Site groundwater users (non-potable)	Rio Tinto's Hope Downs operations are down-gradient from MAC. As part of ongoing mining operations at Hope Downs groundwater abstraction is undertaken, the source of potable and non-potable water on the Hope Down's site is unknown. In addition, 33% of groundwater abstracted during the FY21 was discharged to Juna Downs MAR. Further investigation required as groundwater results are not delineated, although the risk is considered low.	Potentially Complete (Low Risk)	
	Direct consumption of impacted groundwater	Human – Consumers of groundwater at down-gradient properties		Potentially Complete (Low Risk)	
Surface Water and Sediment	Incidental ingestion of impacted sediments and surface water	Human - On-site workers	AoPC 1, 3, 7, 8, 9 and 13 - AoPC not identified as a source of surface water and sediment impact.	Incomplete	N/A
			AoPC 4 and 5 - Concentrations for the sum of PFAS were recorded below the laboratory LOR in samples from the Western, Central and Eastern Infiltration Ponds and discharge creeks. A single sediment concentration was reported above the laboratory LOR, from an emergency overflow pond associated with the Packsaddle WWTP.	Incomplete	N/A
			AoPC 10, 11 and 12 – Sum of PFAS concentrations were recorded above the laboratory LOR in all samples, but were below adopted human health criteria. The composition of the PFAS concentrations within the total soil results comprise predominantly of the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups, of which there is currently no established human health assessment criteria. Sediment from on-site OWS and drainage channels is excavated and transferred to the bioremediation farm (AoPC 12), therefore there is a potential for on-site workers to be exposed to impacted sediments during maintenance activities. On this basis, this pathway is considered to present a potential risk, albeit a very low risk and risk could be mitigated by material management procedures.	Complete (Very Low Risk)	N/A

Impacted Media	Exposure Routes	Receptors	Qualitative Risk Assessment	SPR Linkage (Risk)	Data Gap
		Human - Recreational users of waterbodies	AoPC 4 – Surface water PFAS concentrations were recorded below the laboratory LOR in samples from the Western, Central and Eastern Infiltration Ponds and discharge creeks, with the exception of a single concentration of Perfluorononanoic acid (0.0007 µg/L), slightly above the LOR (0.0005 µg/L), all concentrations were below available human health assessment criteria. Given the location and nature of these waterbodies it is not expected that regular recreational use would occur. On this basis, this pathway is considered to present a low risk of exposure to human receptors.	Incomplete	N/A
	Ingestion or direct uptake of impacted surface water and sediment	Ecological – Aquatic biota	AoPC 4 - Surface water PFAS concentrations were recorded below the laboratory LOR and/or below the adopted available ecological, assessment criteria in samples from the Western, Central and Eastern Infiltration Ponds.	Incomplete	N/A
		Ecological - Terrestrial biota		Incomplete	

15 Conclusions and Recommendations

15.1 Conclusions

Following the completion of the document review and site inspection, a total of 13 AoPC were identified, incorporating BHP WAIO registered contamination areas and sites identified during the Cardno site inspection that had the potential for PFAS to be a source of PFAS due to current or historical activities.

On completion of the field assessment the results indicated that there are five potential source areas, where PFAS is present across the Site, namely:

- AoPC 1 (AC-16) - Coondawanna Airport;
- AoPC 7 (No BHP ID) - New Firefighting Training Ground;
- AoPC 9 (AC-22) - MAC Medical Centre;
- AoPC 10 (AC-09) - Heavy Vehicle Workshops; and
- AoPC 12 (AC-03) - Bioremediation Farm.

PFAS was identified within surface soil, surface water or sediment at each of these AoPC, including concentrations that exceed the relevant adopted assessment criteria.

Of the 51 surface soil and sediment samples across the five AoPC's, 38 samples recorded leachate concentrations above the adopted ecological assessment criteria. The highest concentrations were primarily associated with unregulated compounds, likely associated with the use of 'newer' C6 firefighting foams. The elevated concentrations within leachate indicates PFAS compounds have historically been discharged to the environment at these locations. The connection to groundwater is currently not understood and is considered residual data gap.

Given the large site area, complex geology and depth to water, exceedance of the criteria does not indicate an immediate risk to receptors, although further investigation is required to delineate the extent of the impacts and potential for future migration.

15.1.1.1 AoPC 1 - Coondawanna Airport

All total PFAS concentrations were recorded below the adopted human health and ecological assessment criteria, however, all leachate samples, except for one sample located in the northwest of the apron, recorded a PFOS concentration above the adopted ecological assessment criteria.

The results indicated that the highest concentration of sum of PFAS was recorded to the northwest of the airport apron, where it is reported training exercises utilising foams has been undertaken. The composition of the PFAS concentrations within the total soil results comprise predominantly of the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups.

The highest PFAS concentrations were recorded in nonregulated compounds.

15.1.1.2 AoPC 7 - New Firefighting Training Ground

All total PFAS concentrations were recorded below the adopted human health and ecological assessment criteria, however, all leachate samples recorded a PFOS concentration above the adopted ecological assessment criteria.

The highest PFAS concentrations were recorded in nonregulated compounds.

15.1.1.3 AoPC 9 - MAC Medical Centre

The sum of PFAS concentrations in the surface soils varied significantly across the area, with the location of the highest sum of PFAS concentration immediately to the west of the concrete pad on which the emergency vehicles are parked, however, it is noted that the remaining samples collected adjacent to the concrete pad recorded concentrations two orders of magnitude lower.

There is evidence that PFAS impacted surface runoff has flowed from the concrete pad to the surrounding environment with sum of PFAS concentrations recorded above the laboratory LOR at the base of an incline to the west of the AoPC.

The highest PFAS concentrations were recorded in nonregulated compounds.

15.1.1.4 Heavy Vehicle Workshops

All total soil concentrations were recorded below the adopted human health and ecological assessment criteria, however, all sum of PFAS concentrations were recorded above the laboratory LOR in all samples collected.

Leachate PFOA concentrations were recorded above the laboratory LOR in all samples, but below the adopted human health and ecological assessment criteria. A total of seven of the 16 samples across the HV workshop area recorded a PFOS concentration above the 99% freshwater criteria.

Within the HV Workshop Evaporation Ponds concentrations of sediment, sediment leachate and surface water recorded sum of PFAS concentrations above the laboratory LOR.

The highest PFAS concentrations were recorded in nonregulated compounds.

15.1.1.5 Bioremediation Farm

During the assessment, a single sediment and surface water sample was collected from the dry and wet cell respectively. All total sediment compounds recorded concentrations below the adopted human health and ecological assessment criteria.

Within the leachate sample, concentrations of unregulated Perfluoroalkyl Carboxylic Acids and Fluorotelomer Sulfonic Acid compounds were recorded above the laboratory LOR, with the PFOS concentration also recorded above the 99% freshwater criteria. Of note was the results from a surface water sample collected at the facility which recorded a Sum of PFAS concentration of 353 µg/L.

The highest PFAS concentrations were recorded in nonregulated compounds.

15.2 Recommendations

Following refinement of the CSM the identified AoPC were also considered to represent potentially complete S-P-R linkages, largely due to limited delineation of potential impacts at identified source sites.

During the site visit, six BHP contaminated sites reference areas were unable to be accessed and should be investigated as part of future investigations.

- AC-04 – Inert Landfill;
- AC-05 – Area C Landfill – Putrescible;
- AC-06 – Historical Sewerage Irrigation Area;
- AC-13 – BioMax Evaporation Pond – OHP;
- AC-17 – Packsaddle Historical Sewerage Irrigation Area; and
- AC-19 – BioMax Evaporation Pond – E Deposit.

In addition, it is recommended that the identified AoPC undergo further assessment as summarised below:

- Investigation of soils at depth to assess subsurface PFAS mass:
  - AoPC 1 (AC-16) - Coondawanna Airport;
  - AoPC 7 (No BHP ID) - New Firefighting Training Ground;
  - AoPC 9 (AC-22) - MAC Medical Centre; and
  - AoPC 10 (AC-09) - Heavy Vehicle Workshops.
- Assessment on the nature of the bioremediation cells and source of material transferred to the cells in terms of material management:
  - AoPC 12 (AC-03) - Bioremediation Farm.
- Installation of groundwater monitoring bores down-gradient[2] to assess potential groundwater impacts migrating to nearby receptors:

[2] Groundwater likely has localised and regional flows, potentially in different areas following geology and topography – i.e. in the west will likely flow towards Coondwana Flats or the north - which needs to be considered.

- AoPC 1 (AC-16) - Coondawanna Airport;
- AoPC 7 (No BHP ID) - New Fire Fighting Training Ground;
- AoPC 9 (AC-22) - MAC Medical Centre;
- AoPC 10 (AC-09) - Heavy Vehicle Workshops; and
- AoPC 12 (AC-03) – Bioremediation Farm.

16 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 Standards AS 4439.3:2019 Wastes, sediments and contaminated soils Preparation of leachates - Bottle leaching procedure.
3. 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.
4. BHP Central Pilbara Conceptual Model, June 2019.
5. Bureau of Meteorology (BoM), Climate statistics for Australian Locations – Newman, accessed at http://www.bom.gov.au/climate/averages/tables.
6. Contaminated Sites Act, 2003, Western Australia.
7. Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (2017) Technical Report No. 38, Assessment, management and remediation for PFOS and PFOA
8. Department of Environment Regulation (DER), 2014, Assessment and Management of Contaminated Sites.
9. DoH, 2014, Contaminated Sites Ground and Surface Water Chemical Screening Guidelines.
10. Department of Water and Environmental Regulation, Licence L7851/2002/6 for Mining Area C Project Mining Tenement ML281SA NEWMAN WA 6753
11. Environmental Protection Agency (United States EPA), November 2002, Reference: EPA/240/R-02/004, ‘Guidance on Environmental Data Verification and Data Validation’.
12. The Heads of EPAs Australia and New Zealand (HEPA; 2020) PFAS National Environmental Management Plan (NEMP) 2.0, January 2020.
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 (NHMRC) (2011 – updated 2018) National Water Quality Management Strategy Australian Drinking Water Guidelines 6, August 2018
15. NHMRC, August 2019, Guidance on Per and Polyfluoroalkly Substances (PFAS) in Recreational Water.
16. RPS, 2014. Mining Area C Detailed Hydrogeological Review. July, 2014.
17. RPS, 2015. Ecohydrogeological Conceptualisation of the Central Pibara Region. September, 2015.
18. U.S. Environmental Protection Agency (EPA), 2000, ‘Guidance for the Data Quality Objectives Process (EPA QA/G-4)’.
19. USEPA, 2002, ‘Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8)’.

APPENDIX

A

FIGURES

Cardno

now

Stantec



4089796

3870614

4017186

4017186

F DEPOSIT

E DEPOSIT

D DEPOSIT

C DEPOSIT

A DEPOSIT

Legend

- Existing Production Bore Locations
- Monitoring of Existing Bore Locations
- Major Roads
- Cadastre
- Study Area Extent

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:80,000 Scale at A3

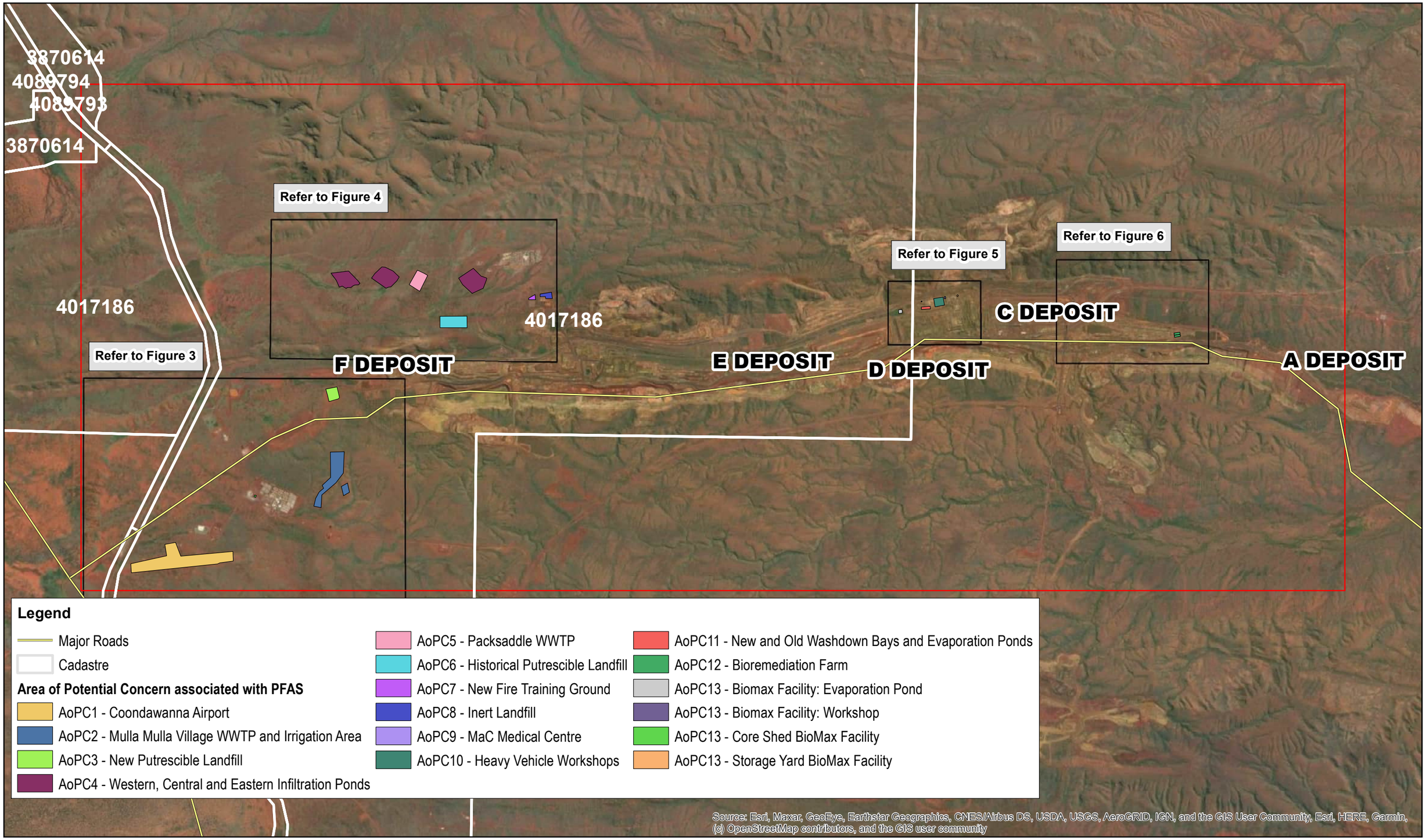
0 0.75 1.5 3 Kilometers

Site Locality Plan

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 1

Cardno

Map Produced by Cardno WA
Date: 2022-01-07
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-001-SiteLocation.mxd



BHP

N

1:75,000 Scale at A3

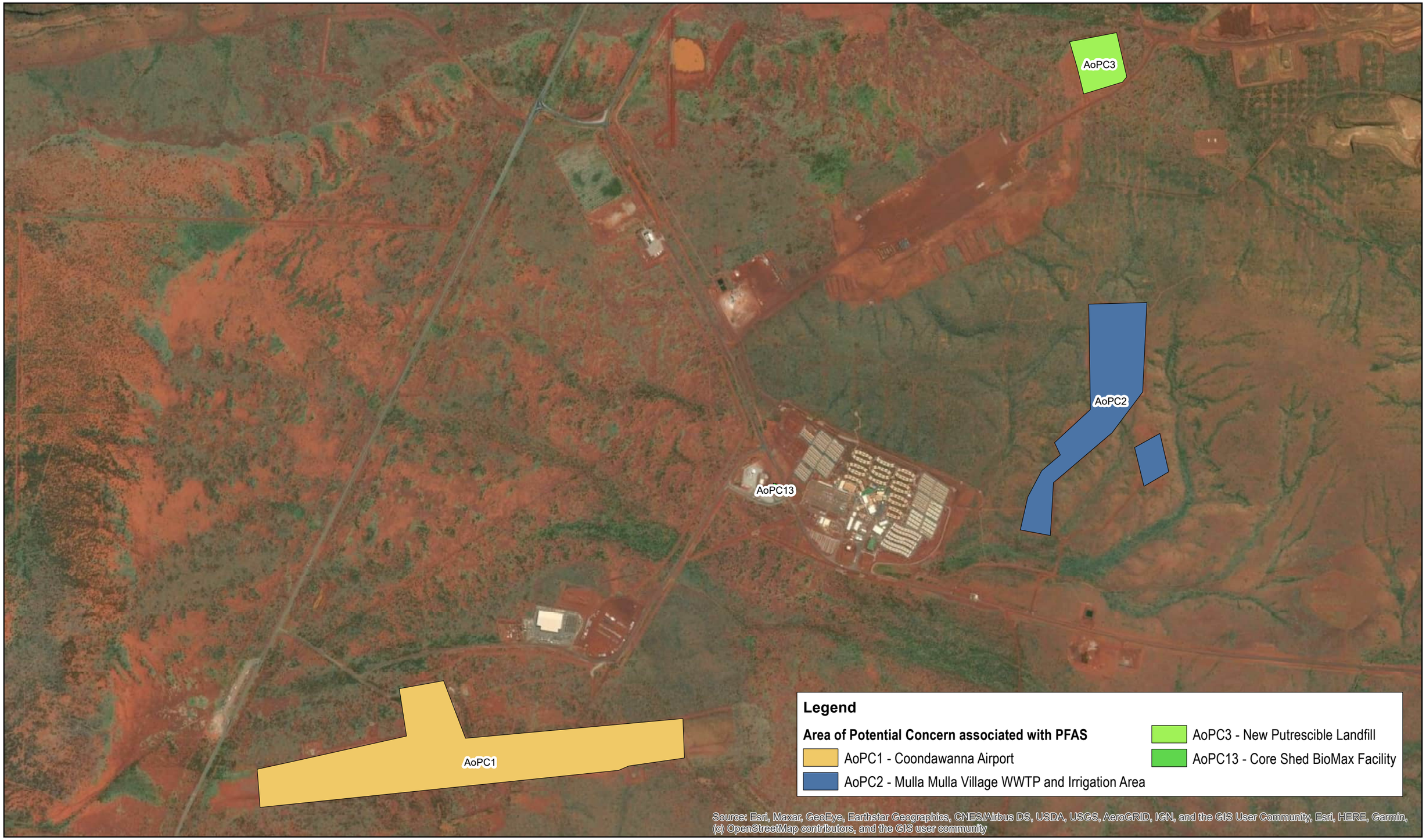
0 0.75 1.5 3 Kilometers

BHP - Areas of Potential Concern

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 2

Cardno

Map Produced by Cardno WA
Date: 2022-01-07
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-002-Areas of Concerns.mxd



BHP

N

1:18,000 Scale at A3

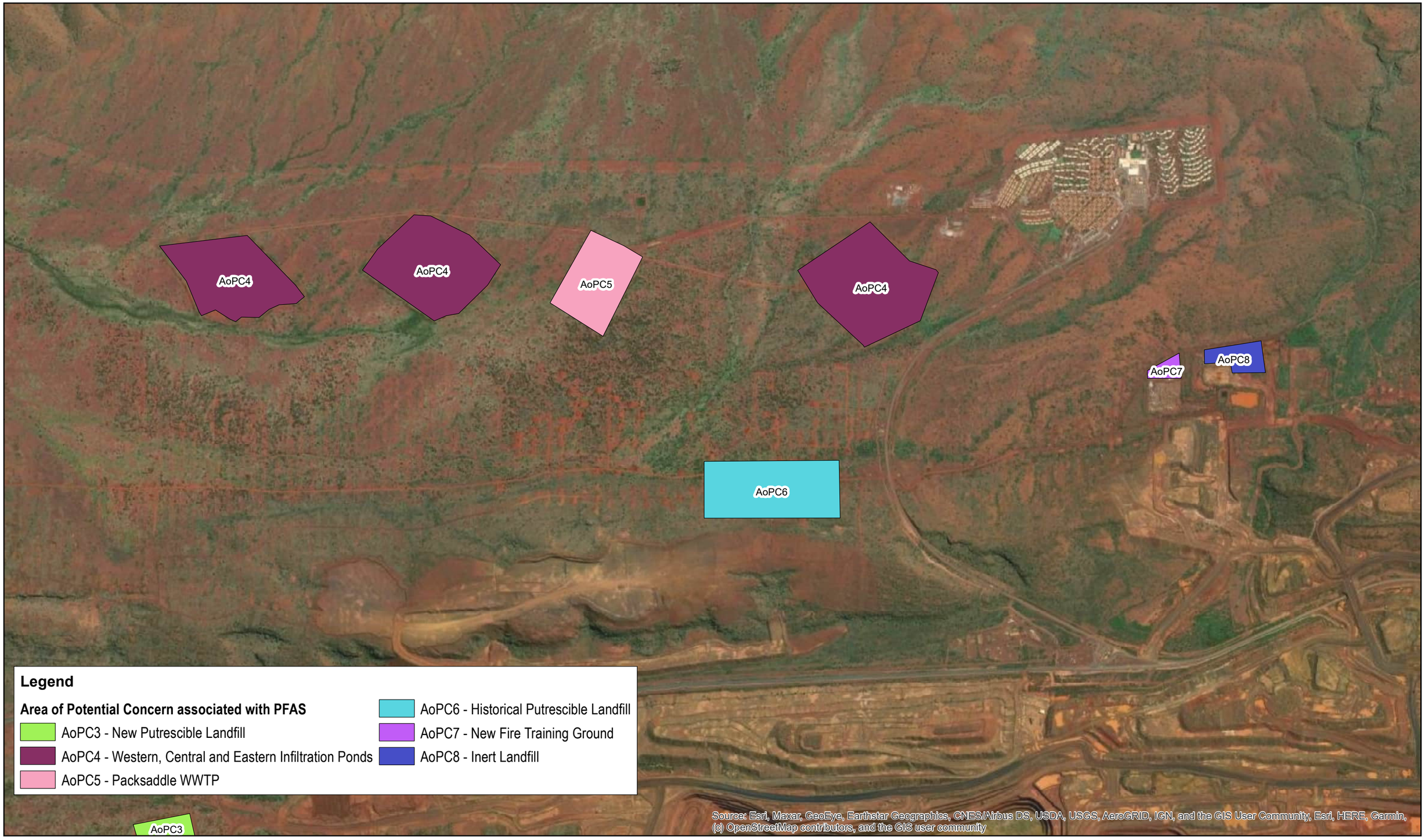
0 200 400 800 Meters

BHP - Areas of Potential Concern

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 3

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-003-Areas of Concerns-Airport.mxd



BHP

N

1:15,000 Scale at A3

0 200 400 800 Meters

BHP - Areas of Potential Concern

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 4

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-004-Areas of Concerns-NewLandfill.mxd



BHP

N

1:5,000 Scale at A3

0 50 100 200 Meters

BHP - Areas of Potential Concern

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 5

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-005-Areas of Concerns-Workshop.mxd



BHP

N

1:12,000 Scale at A3

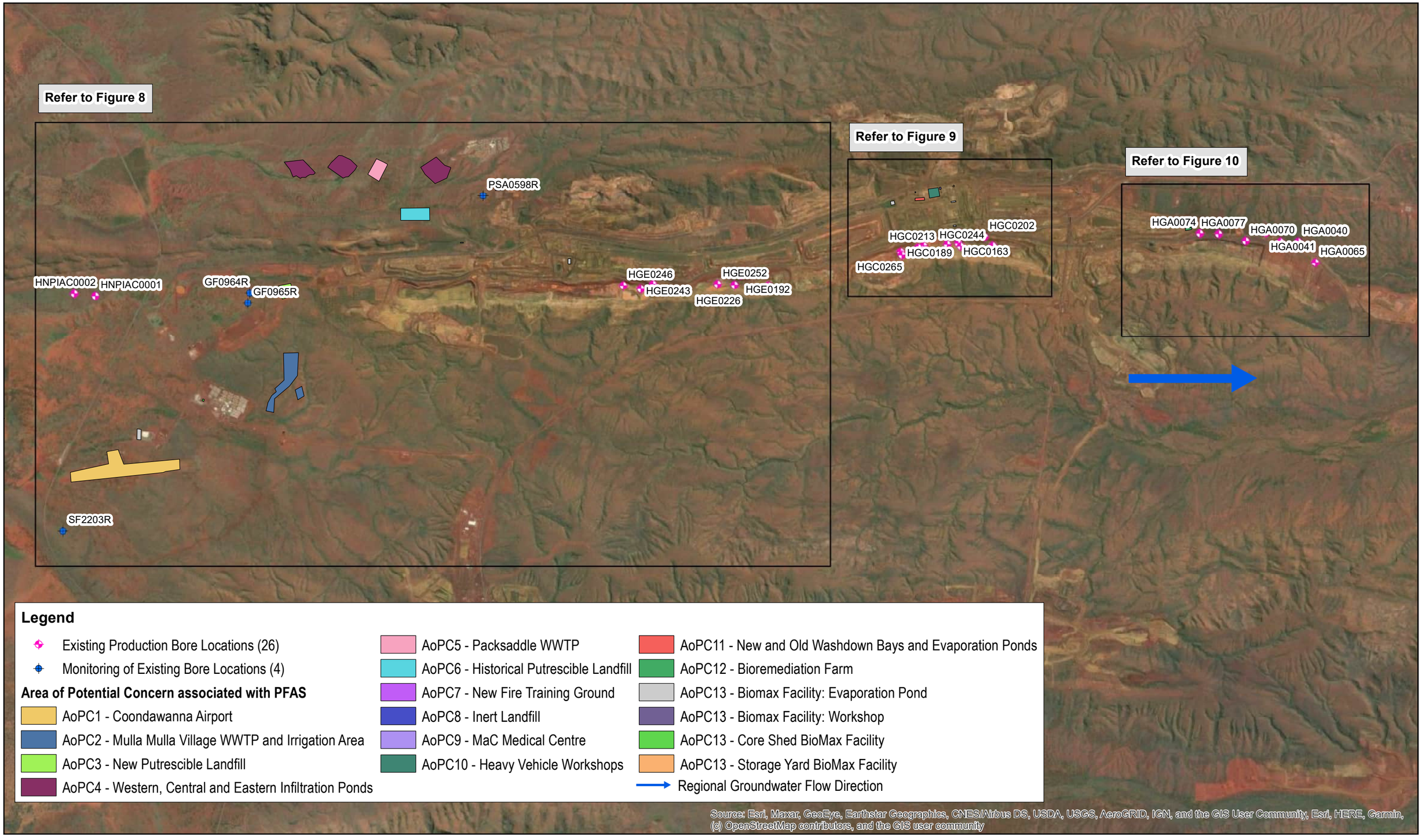
0 125 250 500 Meters

BHP - Areas of Potential Concern

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 6

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-006-Areas of Concerns-Old FTG.mxd



BHP

N

1:70,000 Scale at A3

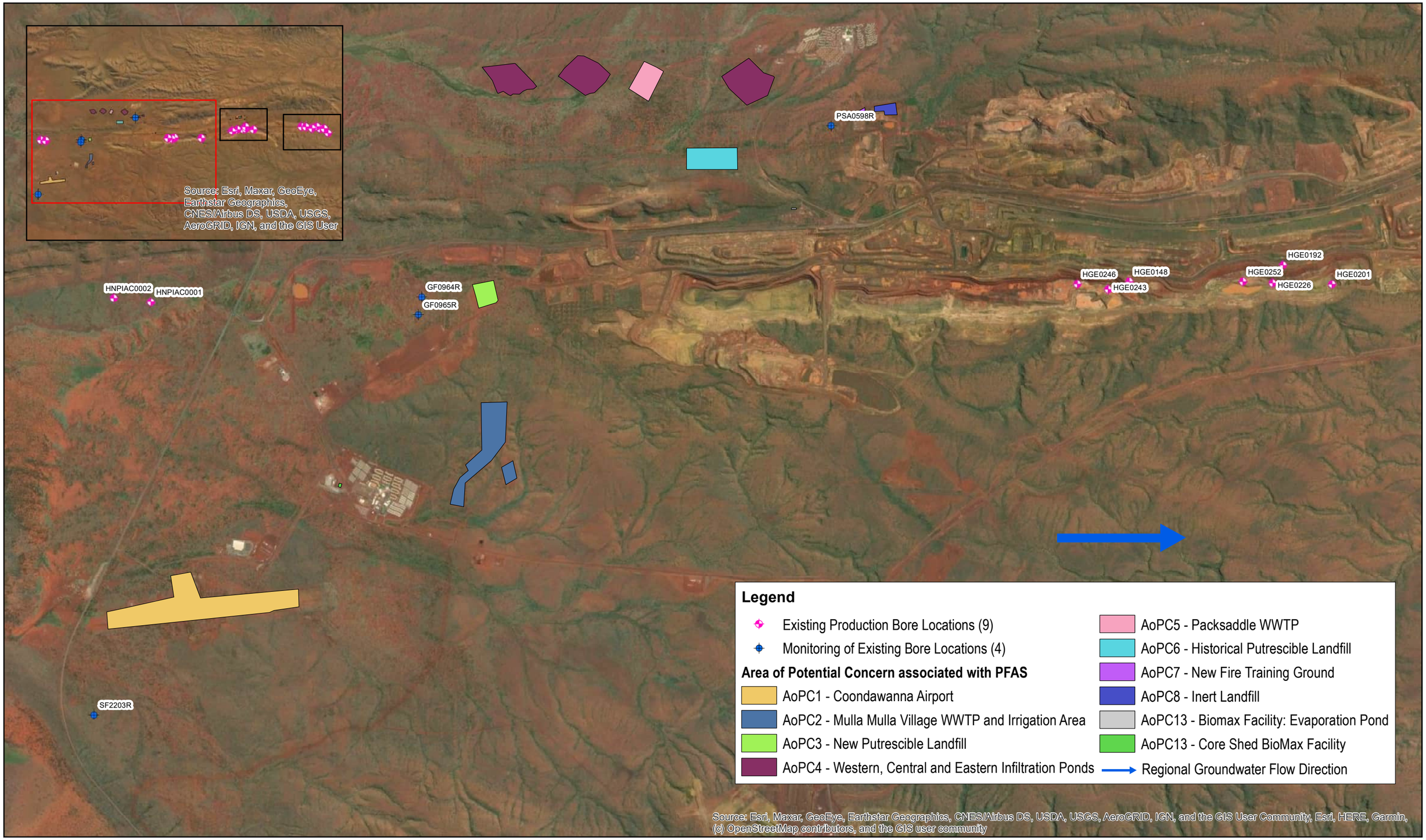
0 0.5 1 2 Kilometers

Groundwater Monitoring Locations

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 7

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-007-GroundwaterMonitoringLocations.mxd



BHP

N

1:40,000 Scale at A3

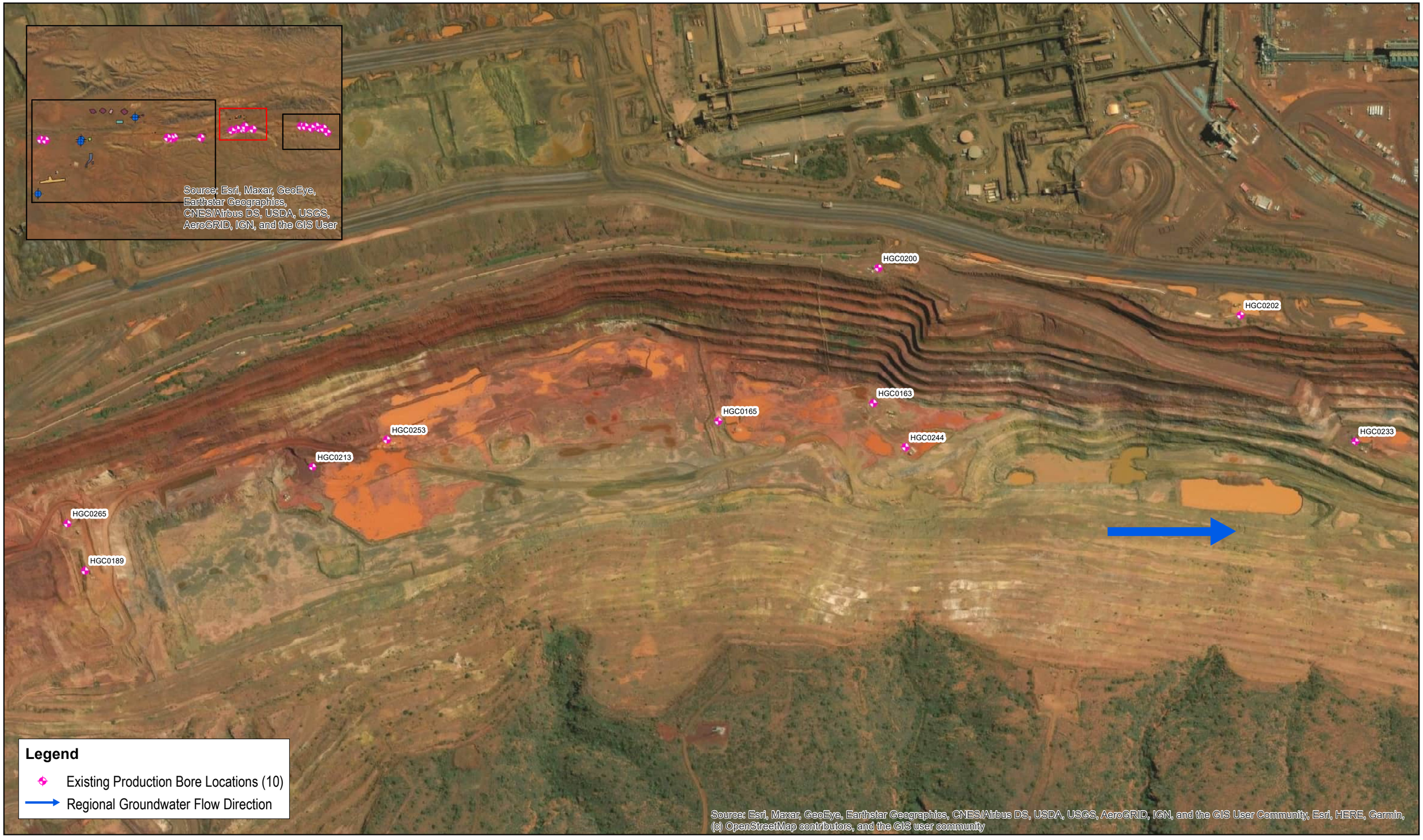
0 0.25 0.5 1 Kilometers

Production Bores - Area E

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 8

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-043-GroundwaterSampling_West_no_tables.mxd



BHP

N

1:5,000 Scale at A3

0 50 100 200 Meters

Production Bores - Area C

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 9

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-042-GroundwaterSampling_Central_no_tables.mxd



BHP

N

1:10,000 Scale at A3

0 125 250 500 Meters

Production Bores - Area A

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 10

Cardno

Map Produced by Cardno WA
Date: 2022-01-06
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-041-GroundwaterSampling_East_no_tables.mxd



		ACCSSS0001
PFOA	mg/kg	<0.0002
	µg/L	0.0092
PFOS	mg/kg	<0.0002
	µg/L	0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0041
Sum of PFAS	mg/kg	0.01
	µg/L	0.411

		ACCSSS0003
PFOA	mg/kg	<0.0002
	µg/L	0.0035
PFOS	mg/kg	<0.0002
	µg/L	0.002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0026
Sum of PFAS	mg/kg	0.0029
	µg/L	0.215

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSS0002
PFOA	mg/kg	<0.0002
	µg/L	0.0055
PFOS	mg/kg	0.0003
	µg/L	0.0115
Sum of PFHxS and PFOS	mg/kg	0.0003
	µg/L	0.0115
Sum of PFAS	mg/kg	0.0031
	µg/L	0.0983

		ACCSSS0004
PFOA	mg/kg	<0.0002
	µg/L	0.0033
PFOS	mg/kg	<0.0002
	µg/L	0.0018
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0025
Sum of PFAS	mg/kg	0.0022
	µg/L	0.0619

		ACCSSS0005
PFOA	mg/kg	<0.0002
	µg/L	0.0018
PFOS	mg/kg	<0.0002
	µg/L	0.002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.002
Sum of PFAS	mg/kg	0.0013
	µg/L	0.0986

		ACCSSS0016
PFOA	mg/kg	<0.0002
	µg/L	0.0064
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0261
	µg/L	0.619

		ACCSSS0015
PFOA	mg/kg	0.0048
	µg/L	0.224
PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0013
Sum of PFAS	mg/kg	0.334
	µg/L	17

		ACCSSS0014
PFOA	mg/kg	<0.0002
	µg/L	0.0037
PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFAS	mg/kg	0.0152
	µg/L	0.506

		ACCSSS0010
PFOA	mg/kg	<0.0002
	µg/L	0.002
PFOS	mg/kg	<0.0002
	µg/L	0.0021
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0053
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0171

		ACCSSS0006
PFOA	mg/kg	<0.0002
	µg/L	0.0007
PFOS	mg/kg	<0.0002
	µg/L	0.0012
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0012
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0076

		ACCSSS0007
PFOA	mg/kg	<0.0002
	µg/L	0.0006
PFOS	mg/kg	<0.0002
	µg/L	0.0067
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0067
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0177

		ACCSSS0013
PFOA	mg/kg	<0.0002
	µg/L	0.005
PFOS	mg/kg	0.0002
	µg/L	0.0056
Sum of PFHxS and PFOS	mg/kg	0.0002
	µg/L	0.0056
Sum of PFAS	mg/kg	0.0089
	µg/L	0.15

		ACCSSS0012
PFOA	mg/kg	<0.0002
	µg/L	0.0064
PFOS	mg/kg	<0.0002
	µg/L	0.0073
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0079
Sum of PFAS	mg/kg	0.0156
	µg/L	0.501

		ACCSSS0011
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0076
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0076
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0146

		ACCSSS0009
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0018
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0018
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0018

		ACCSSS0008
PFOA	mg/kg	<0.0002
	µg/L	0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.004
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.004
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0079

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

Coondawanna Airport

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BHP

N

1:1,500 Scale at A3

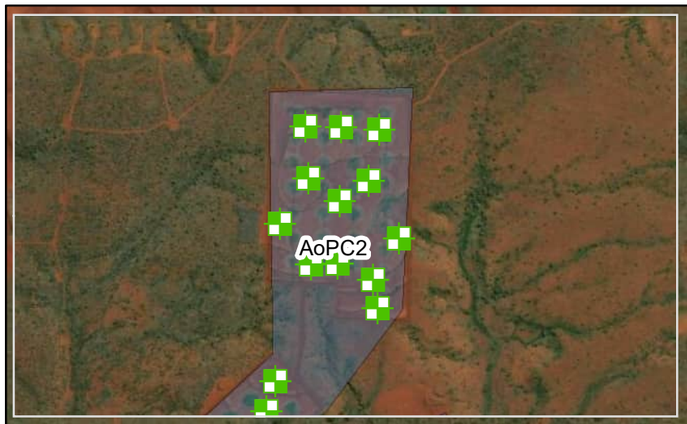
0 10 20 40 Meters

AoPC 1 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 11

Cardno

Map Produced by Cardno WA
Date: 2021-11-15
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-022-AoPC1_Airport.mxd



		ACCSSS0017
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSS0018
PFOA	mg/kg	<0.0002
	µg/L	0.0011
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0069

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSS0019
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0018

		ACCSSS0022
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0021
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0021
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0021

		ACCSSS0020
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0017

		ACCSSS0023
PFOA	mg/kg	<0.0002
	µg/L	0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.003

		ACCSSS0021
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0025

		ACCSSS0025
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0007

		ACCSSS0024
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0008

		ACCSSS0026
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0008

		ACCSSS0028
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0006

		ACCSSS0027
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0004

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

Mulla Mulla Village WWTP and Irrigation Area

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:5,000 Scale at A3

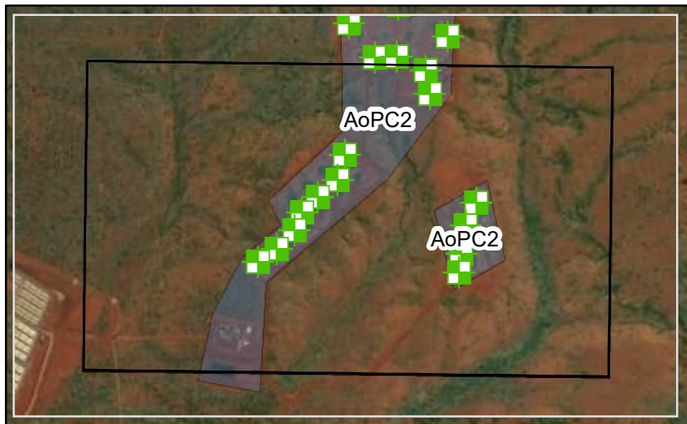
0 40 80 160 Meters

AoPC 2 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 12-1

Cardno

Map Produced by Cardno WA
Date: 2021-11-17
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-024-AoPC2_Mulla Mulla.mxd



		ACCSSS0029
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0039

		ACCSSS0031
PFOA	mg/kg	<0.0002
	µg/L	0.0018
PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0107

		ACCSSS0030
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0018

		ACCSSS0036
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0007

		ACCSSS0033
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0004

		ACCSSS0032
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSS0037
PFOA	mg/kg	<0.0002
	µg/L	0.0015
PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0014
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0157

		ACCSSS0038
PFOA	mg/kg	<0.0002
	µg/L	0.0012
PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0038

		ACCSSS0035
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSS0034
PFOA	mg/kg	<0.0002
	µg/L	0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0012
	µg/L	0.081

		ACCSSS0039
PFOA	mg/kg	<0.0002
	µg/L	0.0006
PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0016

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

Mulla Mulla Village WWTP and Irrigation Area

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:3,500 Scale at A3

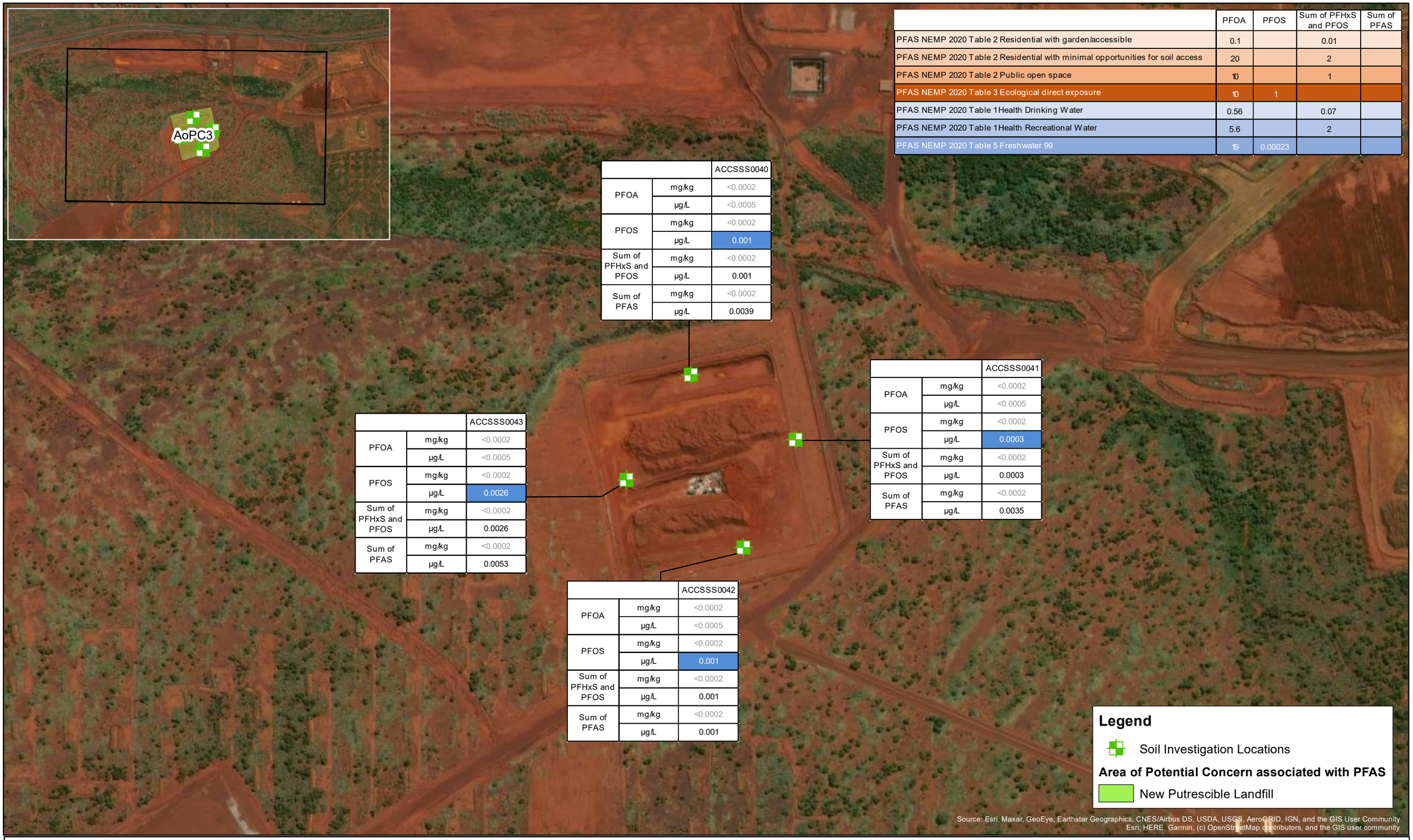
0 25 50 100 Meters

AoPC 2 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 12-2

Cardno

Map Produced by Cardno WA
Date: 2021-11-19
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-023-AoPC2_Mulla Mulla 2.mxd



	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSS0040
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0039

		ACCSSS0041
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0035

		ACCSSS0043
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0026
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0026
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0053

		ACCSSS0042
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.001

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

New Putrescible Landfill

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:4,000 Scale at A3

0 30 60 120 Meters

AoPC 3 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 13

Cardno

Map Produced by Cardno WA
Date: 2021-11-19
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-025-AoPC3_New Putrescible Landfill.mxd

		ACCSSD0002
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSW0003
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		ACCSSW0009
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		ACCSSD0008
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSW0010
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSD0003
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSW0004
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

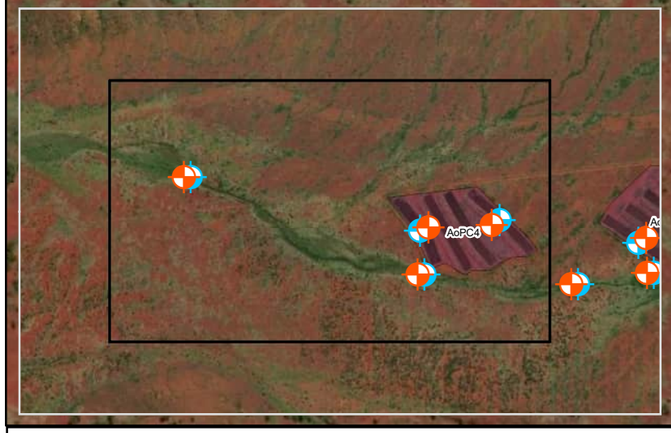
		ACCSSD0009
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

Legend

- Sediment Investigation Location
- Surface Water Investigation Location

Area of Potential Concern associated with PFAS

- Western, Central and Eastern Infiltration Ponds



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:4,500 Scale at A3

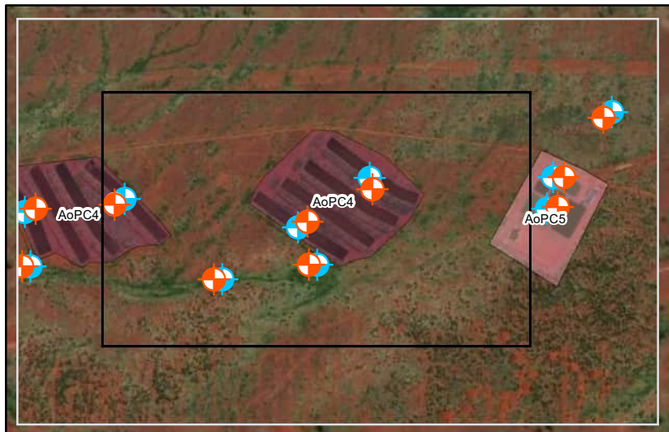
0 35 70 140 Meters

AoPC 4 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 14-1

Cardno

Map Produced by Cardno WA
Date: 2021-11-15
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-026-AoPC4_Western Infiltration Pond.mxd



		ACCSSW0012
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.0007

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSD0010
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSD0011
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSW0011
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		ACCSSD0004
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSW0006
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		ACCSSD0005
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSW0005
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

Legend

- Sediment Investigation Location
- Surface Water Investigation Location

Area of Potential Concern associated with PFAS

- Packsaddle WWTP
- Western, Central and Eastern Infiltration Ponds

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:3,500 Scale at A3

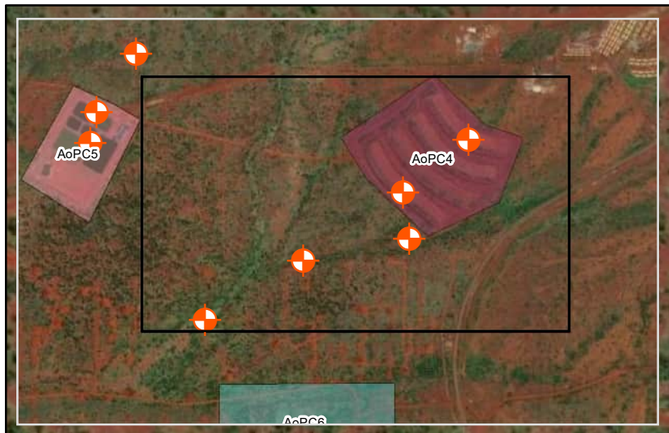
0 25 50 100 Meters

AoPC 4 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 14-2

Cardno

Map Produced by Cardno WA
Date: 2021-11-15
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-027-AoPC4_Central Infiltration Pond.mxd



	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSD0013
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0038

		ACCSSD0012
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0011

		ACCSSD0007
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0013

		ACCSSD0014
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0008
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0008
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0018

		ACCSSD0006
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0009

Legend

- Sediment Investigation Location

Area of Potential Concern associated with PFAS

- Historical Putrescible Landfill
- Packsaddle WWTP
- Western, Central and Eastern Infiltration Ponds

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:3,500 Scale at A3

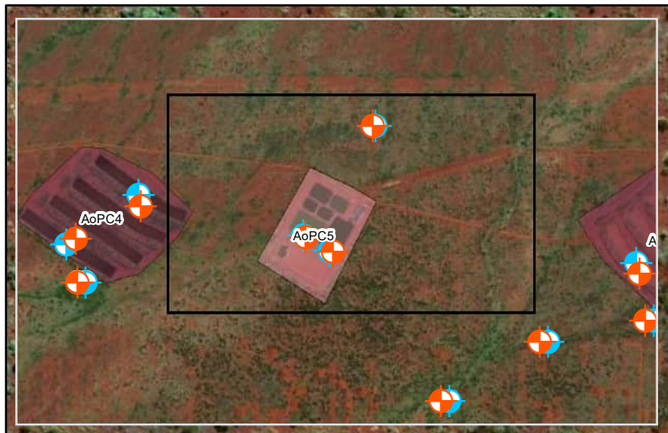
0 25 50 100 Meters

AoPC 4 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 14-3

Cardno

Map Produced by Cardno WA
Date: 2021-11-16
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-028-AoPC4_Eastern Infiltration Pond.mxd



		ACCSSD0017
PFOA	mg/kg	0.0004
	µg/L	0.0077
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0045
	µg/L	0.0351

		ACCSSW0018
PFOA	µg/L	0.131
PFOS	µg/L	<0.0016
Sum of PFHxS and PFOS	µg/L	<0.0016
Sum of PFAS	µg/L	1.04

		ACCSSW0017
PFOA	µg/L	0.0013
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.0379

		ACCSSD0015
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0014

		ACCSSD0016
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0056

		ACCSSW0016
PFOA	µg/L	0.0024
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.0693

Legend

- Sediment Investigation Location
- Surface Water Investigation Location

Area of Potential Concern associated with PFAS

- Packsaddle WWTP
- Western, Central and Eastern Infiltration Ponds

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:3,000 Scale at A3

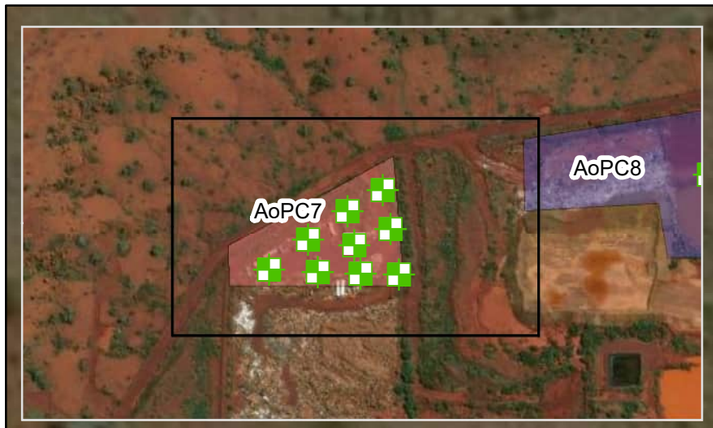
0 20 40 80 Meters

AoPC 5 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 15

Cardno

Map Produced by Cardno WA
Date: 2021-11-19
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-029-AoPC 5_Packsaddle WWTP.mxd



		ACCSSS0054
PFOA	mg/kg	<0.0002
	µg/L	0.0067
PFOS	mg/kg	<0.0002
	µg/L	0.0012
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0012
Sum of PFAS	mg/kg	0.0115
	µg/L	0.543

		ACCSSS0051
PFOA	mg/kg	0.0005
	µg/L	0.0278
PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFAS	mg/kg	0.0129
	µg/L	0.477

		ACCSSS0055
PFOA	mg/kg	0.0006
	µg/L	0.0271
PFOS	mg/kg	<0.0002
	µg/L	0.0014
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0014
Sum of PFAS	mg/kg	0.0605
	µg/L	1.83

		ACCSSS0049
PFOA	mg/kg	0.0007
	µg/L	0.0358
PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFAS	mg/kg	0.0127
	µg/L	0.528

		ACCSSS0052
PFOA	mg/kg	0.0014
	µg/L	0.0632
PFOS	mg/kg	<0.0002
	µg/L	0.0013
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0013
Sum of PFAS	mg/kg	0.0392
	µg/L	1.45

		ACCSSS0048
PFOA	mg/kg	0.0026
	µg/L	0.114
PFOS	mg/kg	<0.0002
	µg/L	0.0014
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0021
Sum of PFAS	mg/kg	0.0314
	µg/L	1.16

		ACCSSS0050
PFOA	mg/kg	0.002
	µg/L	0.0687
PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFAS	mg/kg	0.0225
	µg/L	0.659

		ACCSSS0053
PFOA	mg/kg	0.0041
	µg/L	0.145
PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFAS	mg/kg	0.0542
	µg/L	1.37

		ACCSSS0056
PFOA	mg/kg	0.0004
	µg/L	0.0215
PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFAS	mg/kg	0.0247
	µg/L	1.11

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

Inert Landfill

New Fire Training Ground

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:750 Scale at A3

0 5 10 20 Meters

AoPC 7 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 16

Cardno

Map Produced by Cardno WA
Date: 2021-11-15
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-030-AoPC 7_New Fire Training Ground.mxd



		ACCSSS0057
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0007
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.004

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSS0058
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0097

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

Inert Landfill

New Fire Training Ground

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:3,500 Scale at A3

0 25 50 100 Meters

AoPC 8 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 17

Cardno

Map Produced by Cardno WA
Date: 2021-11-19
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-031-AoPC 8_Inert Landfill.mxd



		ACCSSS0059
PFOA	mg/kg	<0.0002
	µg/L	0.0043
PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFAS	mg/kg	0.0086
	µg/L	0.154

		ACCSSS0060
PFOA	mg/kg	0.0443
	µg/L	1.51
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.56
	µg/L	24.6

		ACCSSS0066
PFOA	mg/kg	<0.0002
	µg/L	0.0086
PFOS	mg/kg	<0.0002
	µg/L	0.0046
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0046
Sum of PFAS	mg/kg	0.122
	µg/L	4.76

		ACCSSS0061
PFOA	mg/kg	<0.0002
	µg/L	0.0048
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0187
	µg/L	0.218

		ACCSSS0065
PFOA	mg/kg	0.0041
	µg/L	0.0775
PFOS	mg/kg	<0.0002
	µg/L	0.0027
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0027
Sum of PFAS	mg/kg	0.217
	µg/L	5.29

		ACCSSS0064
PFOA	mg/kg	0.0009
	µg/L	0.0539
PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0011
Sum of PFAS	mg/kg	0.218
	µg/L	4.03

		ACCSSS0063
PFOA	mg/kg	0.0003
	µg/L	0.0252
PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFAS	mg/kg	0.137
	µg/L	3.62

		ACCSSS0062
PFOA	mg/kg	<0.0002
	µg/L	0.0045
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0251
	µg/L	0.385

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

Heavy Vehicle Workshops

MaC Medical Centre

New and Old Washdown Bays and Evaporation Ponds

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:400 Scale at A3

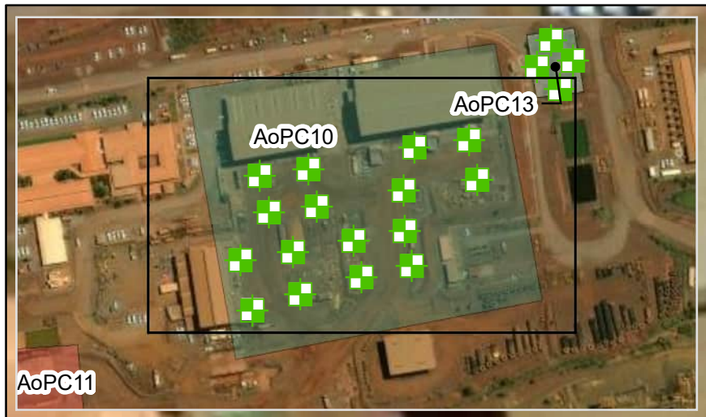
0 3 6 12 Meters

AoPC 9 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 18

Cardno

Map Produced by Cardno WA
Date: 2021-11-15
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-032-AoPC 9_MaC Medical Centre.mxd



		ACCSSS0067
PFOA	mg/kg	0.0004
	µg/L	0.0209
PFOS	mg/kg	<0.0002
	µg/L	0.0097
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0125
Sum of PFAS	mg/kg	0.249
	µg/L	103

		ACCSSS0068
PFOA	mg/kg	0.0006
	µg/L	0.0249
PFOS	mg/kg	<0.0002
	µg/L	0.0047
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0081
Sum of PFAS	mg/kg	0.23
	µg/L	7.79

		ACCSSS0069
PFOA	mg/kg	0.0003
	µg/L	0.0145
PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0005
Sum of PFAS	mg/kg	0.248
	µg/L	7.95

		ACCSSS0070
PFOA	mg/kg	0.0032
	µg/L	0.236
PFOS	mg/kg	<0.0002
	µg/L	0.0004
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.001
Sum of PFAS	mg/kg	1.1
	µg/L	51.1

		ACCSSS0071
PFOA	mg/kg	0.0003
	µg/L	0.0163
PFOS	mg/kg	<0.0002
	µg/L	0.0038
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0086
Sum of PFAS	mg/kg	0.0792
	µg/L	3.91

		ACCSSS0072
PFOA	mg/kg	0.0006
	µg/L	0.0253
PFOS	mg/kg	<0.0002
	µg/L	0.0039
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0087
Sum of PFAS	mg/kg	0.179
	µg/L	5.95

		ACCSSS0073
PFOA	mg/kg	0.0006
	µg/L	0.0226
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.276
	µg/L	9.36

		ACCSSS0074
PFOA	mg/kg	0.0013
	µg/L	0.0493
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.49
	µg/L	15.6

		ACCSSS0075
PFOA	mg/kg	0.0008
	µg/L	0.0261
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.178
	µg/L	5.53

		ACCSSS0076
PFOA	mg/kg	0.0006
	µg/L	0.0219
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.149
	µg/L	2.92

		ACCSSS0077
PFOA	mg/kg	<0.0002
	µg/L	0.0021
PFOS	mg/kg	<0.0002
	µg/L	0.0019
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0019
Sum of PFAS	mg/kg	0.0528
	µg/L	0.575

		ACCSSS0078
PFOA	mg/kg	0.0007
	µg/L	0.0253
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.207
	µg/L	7.15

		ACCSSS0079
PFOA	mg/kg	0.0006
	µg/L	0.0206
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.224
	µg/L	7.87

		ACCSSS0080
PFOA	mg/kg	0.0007
	µg/L	0.0291
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.11
	µg/L	4.22

		ACCSSS0081
PFOA	mg/kg	<0.0002
	µg/L	0.0061
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.0604
	µg/L	1.7

		ACCSSS0082
PFOA	mg/kg	0.0017
	µg/L	0.0522
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.39
	µg/L	13.9

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

- Biomax Facility: Workshop
- Heavy Vehicle Workshops
- New and Old Washdown Bays and Evaporation Ponds

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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BHP

N

1:700 Scale at A3

0 5 10 20 Meters

AoPC 10 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 19-1

Cardno

Map Produced by Cardno WA
Date: 2021-11-18
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-033-AoPC 10_Heavy Vehicle Workshops.mxd



		ACCSSD0021
PFOA	mg/kg	<0.0002
	µg/L	0.0021
PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0016
Sum of PFAS	mg/kg	0.104
	µg/L	23.1

		ACCSSW0019
PFOA	µg/L	0.0036
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	14.1

		ACCSSD0022
PFOA	mg/kg	<0.0002
	µg/L	0.0021
PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFAS	mg/kg	0.0859
	µg/L	3.01

		ACCSSW0020
PFOA	µg/L	0.0037
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	8.29

Legend

- Sediment Investigation Location
- Surface Water Investigation Location

Area of Potential Concern associated with PFAS

- Biomax Facility: Workshop
- Heavy Vehicle Workshops

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:500 Scale at A3

0 4 8 16 Meters

AoPC 10 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 19-2

Cardno

Map Produced by Cardno WA
Date: 2021-11-19
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-034-AoPC 10_Heavy Vehicle Workshops 2.mxd



		ACCSSS0083
PFOA	mg/kg	0.0003
	µg/L	0.0295
PFOS	mg/kg	<0.0002
	µg/L	0.0027
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0027
Sum of PFAS	mg/kg	0.0535
	µg/L	2.68

		ACCSSW0022
PFOA	µg/L	0.0018
PFOS	µg/L	<0.0016
Sum of PFHxS and PFOS	µg/L	<0.0016
Sum of PFAS	µg/L	3

		ACCSSS0084
PFOA	mg/kg	<0.0002
	µg/L	0.0022
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0079
	µg/L	0.332

		ACCSSS0086
PFOA	mg/kg	0.0002
	µg/L	0.0117
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0085
	µg/L	0.128

		ACCSSD0023
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSW0021
PFOA	µg/L	<0.0016
PFOS	µg/L	<0.0016
Sum of PFHxS and PFOS	µg/L	<0.0016
Sum of PFAS	µg/L	2.17

		ACCSSS0085
PFOA	mg/kg	<0.0002
	µg/L	0.0045
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	0.0052
	µg/L	0.361

		ACCSSD0024
PFOA	mg/kg	<0.0002
	µg/L	0.0015
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

Legend

- Sediment Investigation Location
- Surface Water Investigation Location
- Soil Investigation Locations

Area of Potential Concern associated with PFAS

- Heavy Vehicle Workshops
- MaC Medical Centre
- New and Old Washdown Bays and Evaporation Ponds

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:500 Scale at A3

0 4 8 16 Meters

AoPC 11 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 20

Cardno

Map Produced by Cardno WA
Date: 2021-11-19
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-035-AoPC 11_Washdown Bay.mxd



	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

		ACCSSD0025
PFOA	mg/kg	0.0047
	µg/L	0.138
PFOS	mg/kg	0.0005
	µg/L	0.0112
Sum of PFHxS and PFOS	mg/kg	0.0005
	µg/L	0.0112
Sum of PFAS	mg/kg	0.121
	µg/L	2.47

		ACCSSW0023
PFOA	µg/L	0.44
PFOS	µg/L	0.0726
Sum of PFHxS and PFOS	µg/L	0.0726
Sum of PFAS	µg/L	353

Legend

Sediment Investigation Location

Surface Water Investigation Location

Area of Potential Concern associated with PFAS

Bioremediation Farm

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:3,500 Scale at A3

0 25 50 100 Meters

AoPC 12 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 21

Cardno

Map Produced by Cardno WA
Date: 2021-11-19
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-036-AoPC 12_Bioremediation Farm.mxd



		ACCSSS0111
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0012
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0012
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0012

		ACCSSS0113
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0017
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0017
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.003

		ACCSSS0112
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	<0.0002

		ACCSSS0114
PFOA	mg/kg	<0.0002
	µg/L	0.0009
PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFHxS and	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0018

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

- AoPC1 - Coondawanna Airport
- AoPC13 - Biomax Facility: Evaporation Pond
- AoPC13 - Core Shed BioMax Facility

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:3,000 Scale at A3

0 25 50 100 Meters

AoPC 13 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 22-1

Cardno

Map Produced by Cardno WA
Date: 2022-01-12
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-037-AoPC 13_Core Shed BioMax Facility.mxd



		ACCSSS0100
PFOA	mg/kg	<0.0002
	µg/L	0.0009
PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0009
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0208

		ACCSSS0099
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0013
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0013
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0086

		ACCSSS0102
PFOA	mg/kg	<0.0002
	µg/L	0.0008
PFOS	mg/kg	<0.0002
	µg/L	0.0017
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0017
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0249

		ACCSSS0101
PFOA	mg/kg	0.0007
	µg/L	0.0224
PFOS	mg/kg	<0.0002
	µg/L	0.0008
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0008
Sum of PFAS	mg/kg	0.0117
	µg/L	0.113

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

- AoPC9 - MaC Medical Centre
- AoPC11 - New and Old Washdown Bays and Evaporation Ponds
- AoPC13 - Biomax Facility: Evaporation Pond

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:2,000 Scale at A3

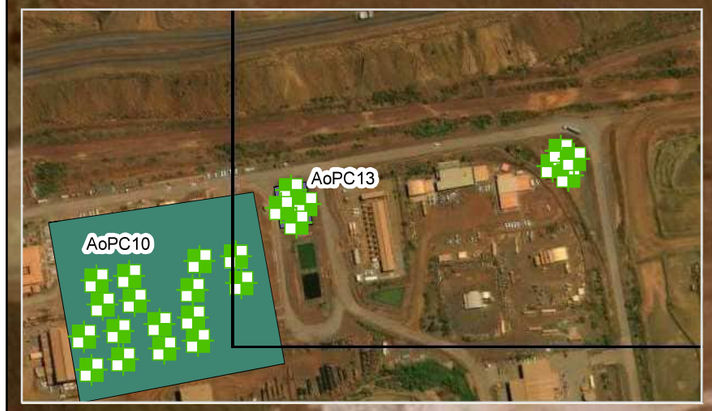
0 25 50 100 Meters

AoPC 13 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 22-2

Cardno

Map Produced by Cardno WA
Date: 2022-01-12
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-038-AoPC 13_Medical Centre BioMax Facility.mxd



		ACCSSS0121
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0003
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0089

		ACCSSS0120
PFOA	mg/kg	<0.0002
	µg/L	<0.0005
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0072

		ACCSSS0122
PFOA	mg/kg	<0.0002
	µg/L	0.0016
PFOS	mg/kg	<0.0002
	µg/L	0.0014
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0014
Sum of PFAS	mg/kg	0.0006
	µg/L	0.0528

		ACCSSS0119
PFOA	mg/kg	0.0002
	µg/L	0.0084
PFOS	mg/kg	<0.0002
	µg/L	0.0018
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0018
Sum of PFAS	mg/kg	0.0104
	µg/L	1

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

- AoPC10 - Heavy Vehicle Workshops
- AoPC13 - Biomax Facility: Workshop
- AoPC13 - Storage Yard BioMax Facility

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:1,500 Scale at A3

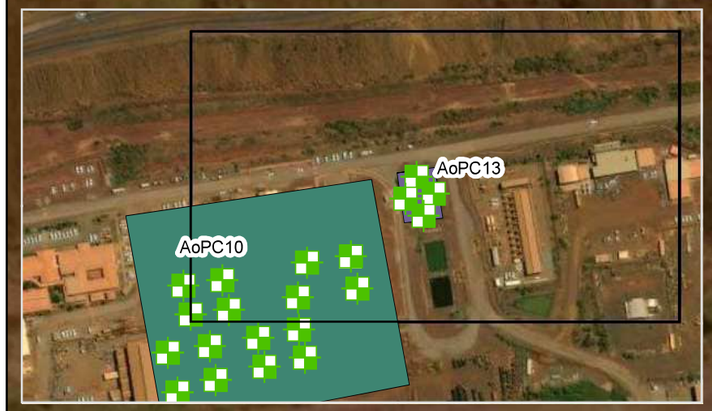
0 12.5 25 50 Meters

AoPC 13 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 22-3

Cardno

Map Produced by Cardno WA
Date: 2022-01-12
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-039-AoPC 13_Storage Yard BioMax Facility.mxd



		ACCSSS0117
PFOA	mg/kg	<0.0002
	µg/L	0.0006
PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	<0.0002
Sum of PFAS	mg/kg	<0.0002
	µg/L	0.0286

		ACCSSS0116
PFOA	mg/kg	<0.0002
	µg/L	0.0022
PFOS	mg/kg	<0.0002
	µg/L	0.0013
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0013
Sum of PFAS	mg/kg	0.004
	µg/L	0.097

		ACCSSS0118
PFOA	mg/kg	<0.0002
	µg/L	0.0009
PFOS	mg/kg	<0.0002
	µg/L	0.0006
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0006
Sum of PFAS	mg/kg	0.0002
	µg/L	0.0532

		ACCSSS0115
PFOA	mg/kg	<0.0002
	µg/L	0.0052
PFOS	mg/kg	<0.0002
	µg/L	0.0032
Sum of PFHxS and PFOS	mg/kg	<0.0002
	µg/L	0.0032
Sum of PFAS	mg/kg	0.0154
	µg/L	0.255

Legend

Soil Investigation Locations

Area of Potential Concern associated with PFAS

AoPC10 - Heavy Vehicle Workshops

AoPC13 - Biomax Facility: Workshop

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 2 Residential with garden/accessible	0.1		0.01	
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access	20		2	
PFAS NEMP 2020 Table 2 Public open space	10		1	
PFAS NEMP 2020 Table 3 Ecological direct exposure	10	1		
PFAS NEMP 2020 Table 1Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:1,000 Scale at A3

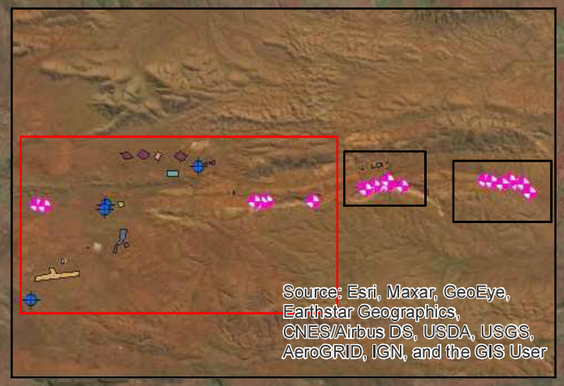
0 12.5 25 50 Meters

AoPC 13 Summary of PFAS Analysis

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 22-4

Cardno

Map Produced by Cardno WA
Date: 2022-01-12
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-040-AoPC 13_Workshop BioMax Facility.mxd



		GF0964R
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.0007

		PSA0598R
PFOA	µg/L	<0.0005
PFOS	µg/L	0.0031
Sum of PFHxS and PFOS	µg/L	0.0031
Sum of PFAS	µg/L	0.0091

		HGE0148P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGE0192P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HNPIAC0002P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HNPIAC0001P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		GF0965R
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGE0246P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGE0243P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGE0252P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGE0226P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGE0201P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		SF2203R
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 1 Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1 Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Legend

- Existing Production Bore Locations (9)
- Monitoring of Existing Bore Locations (4)

Area of Potential Concern associated with PFAS

- AoPC1 - Coondawanna Airport
- AoPC2 - Mulla Mulla Village WWTP and Irrigation Area
- AoPC3 - New Putrescible Landfill
- AoPC4 - Western, Central and Eastern Infiltration Ponds
- AoPC5 - Packsaddle WWTP
- AoPC7 - New Fire Training Ground
- AoPC8 - Inert Landfill
- AoPC13 - Biomax Facility: Evaporation Pond
- AoPC13 - Core Shed BioMax Facility
- Regional Groundwater Flow Direction

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:40,000 Scale at A3

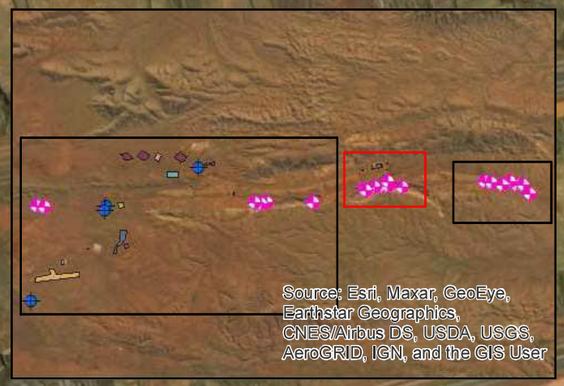
0 250 500 1,000 Meters

Production Bores - Area E

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 23

Cardno

Map Produced by Cardno WA
Date: 2022-01-12
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-043-GroundwaterSampling_West.mxd



		HGC0202P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.0016

		HGC0253P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGC0200P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGC0265P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGC0244P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGC0213P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGC0189P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.0005

		HGC0165P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGC0163P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGC0233P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 1 Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1 Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Legend

- Existing Production Bore Locations (10)
- Regional Groundwater Flow Direction

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:5,000 Scale at A3

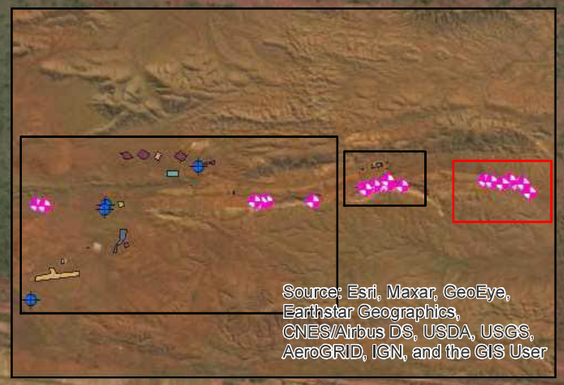
0 50 100 200 Meters

Production Bores - Area C

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 24

Cardno

Map Produced by Cardno WA
Date: 2022-01-11
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-042-GroundwaterSampling_Central.mxd



		HGA0077P
PFOA	µg/L	<0.0005
PFOS	µg/L	0.0003
Sum of PFHxS and PFOS	µg/L	0.0003
Sum of PFAS	µg/L	0.0003

		HGA0041P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGA0040P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.0013

		HGA0074P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	0.002

		HGA0070P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGA0062P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

		HGA0065P
PFOA	µg/L	<0.0005
PFOS	µg/L	<0.0002
Sum of PFHxS and PFOS	µg/L	<0.0002
Sum of PFAS	µg/L	<0.0002

Legend

- Existing Production Bore Locations (7)

Area of Potential Concern associated with PFAS

- AoPC12 - Bioremediation Farm
- Regional Groundwater Flow Direction

	PFOA	PFOS	Sum of PFHxS and PFOS	Sum of PFAS
PFAS NEMP 2020 Table 1 Health Drinking Water	0.56		0.07	
PFAS NEMP 2020 Table 1 Health Recreational Water	5.6		2	
PFAS NEMP 2020 Table 5 Freshwater 99	19	0.00023		

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

BHP

N

1:10,000 Scale at A3

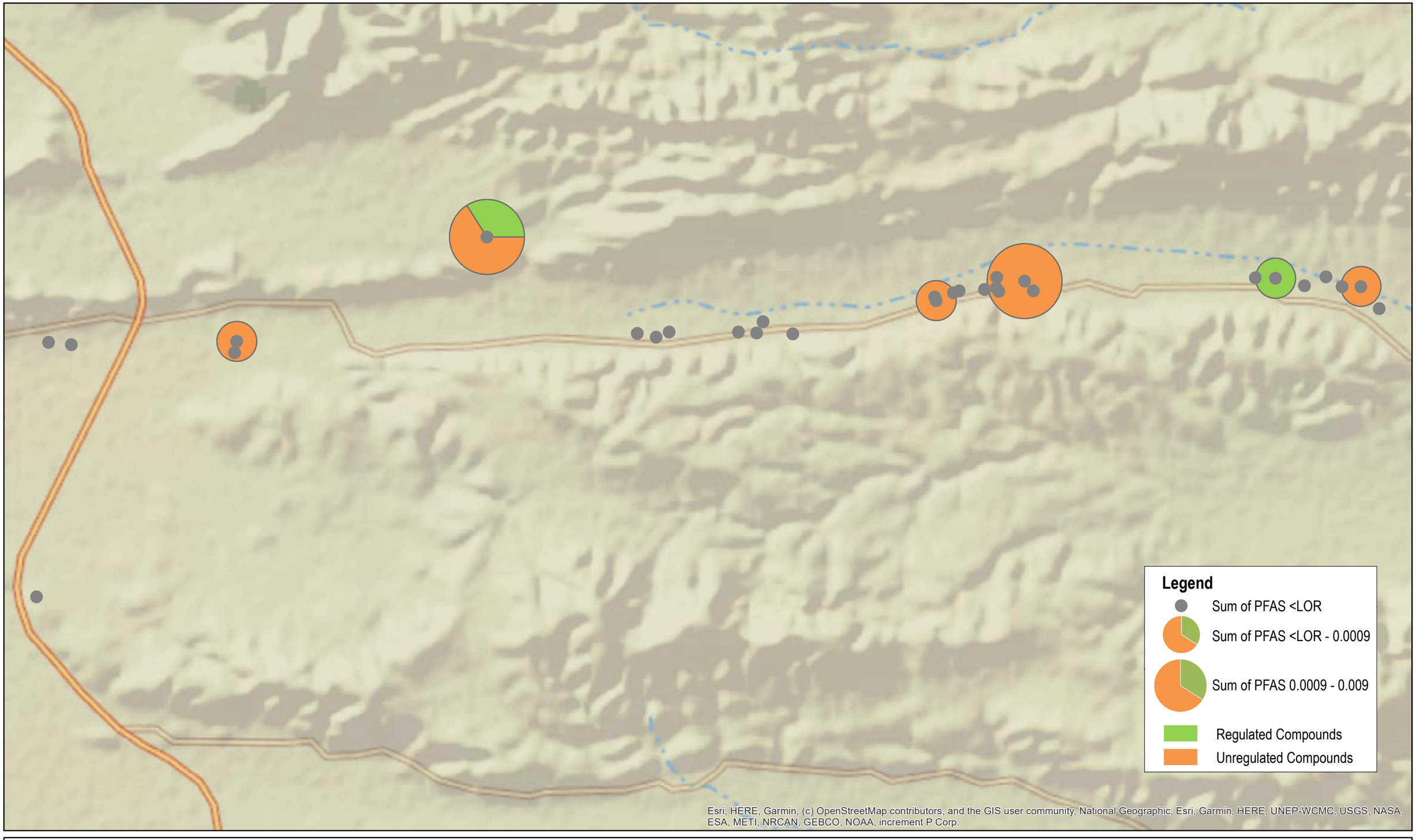
0 125 250 500 Meters

Production Bores - Area A

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 25

Cardno

Map Produced by Cardno WA
Date: 2022-01-11
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-041-GroundwaterSampling_East.mxd



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

BHP

N

1:65,000 Scale at A3

0 0.5 1 2 Kilometers

Groundwater Monitoring Bores

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 26

Cardno

Map Produced by Cardno WA
Date: 2021-11-29
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-044-GroundwaterMonitoring.mxd

Transport Pathways

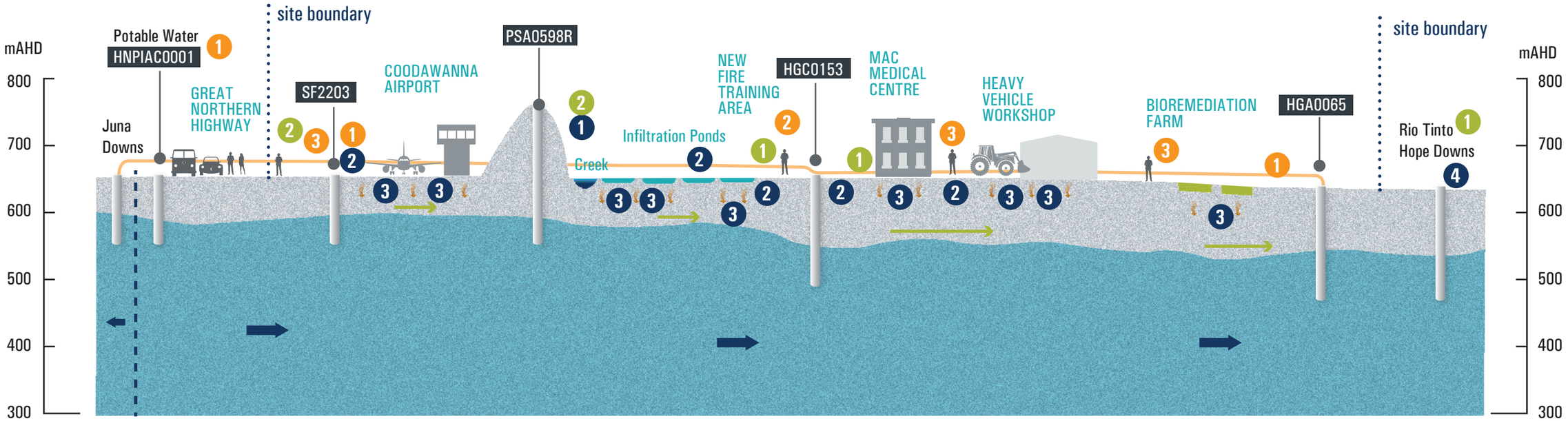
1. Migration in Surface Water
2. Leaching from Soil to Surface Runoff
3. Infiltration and leaching from soil to groundwater and migration
4. Extraction of groundwater

Human Exposure Pathways

1. Direct consumption of impacted groundwater
2. Incidental ingestion of impacted groundwater
3. Incidental ingestion of impacted soil and sediments

Ecological Exposure Pathways

1. Direct contact and uptake of impacts in soil
2. Direct contact and uptake of impacted surface water and sediment



LEGEND

- Pipeline for abstracted groundwater
- Groundwater flow direction
- Water table
- Change in groundwater flow direction
- Abstraction / groundwater monitoring bore
- Infiltration
- Transport Pathway
- Site boundary

BHP

1:65,000 Scale at A3

N

0 0.5 1 2 Kilometers

Conceptual Site Model

PRELIMINARY PFAS ASSESSMENT MINING AREA C
FIGURE 27

Cardno

Map Produced by Cardno WA
Date: 2021-11-29
Coordinate System: GDA 1994 MGA Zone 50
Project: CW1173100
Map: CW1173100-044-GroundwaterMonitoring.mxd

APPENDIX

B

ASSESSMENT TABLES

Cardno

now

Stantec

			Perfluorocarbons																																
			2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	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-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 PFHxS and PFOS	Sum of WA DWER PFAS	Sum of PFHxS and PFOS
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002		0.0002
PFAS NEMP 2020 Table 2 Residential with garden/accessible														0.1																		0.01		0.01
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access														20																		2		2
PFAS NEMP 2020 Table 2 Public open space														10																		1		1
PFAS NEMP 2020 Table 3 Ecological direct exposure								1						10																					
PFAS NEMP 2020 Table 3 Ecological indirect exposure								0.01																											
Site ID	**Field ID**	**Date**																																	
Coondawanna Airport	ACCSSS0001	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0007	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0089	<0.0005	<0.0005	0.01	<0.0002	0.01	<0.0002
	ACCSSS0002	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0007	0.0007	0.0031	0.0003	0.001	0.0003	
	ACCSSS0003	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0009	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0015	<0.0005	<0.0005	0.0029	<0.0002	0.0029	<0.0002
	ACCSSS0004	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0022	<0.0005	<0.0005	0.0022	<0.0002	0.0022	<0.0002
	ACCSSS0005	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0007	<0.0005	<0.0005	0.0013	<0.0002	0.0013	<0.0002
	ACCSSS0006	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0007	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0008	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0009	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0010	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0011	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0012	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0148	0.0006	<0.0005	0.0156	<0.0002	0.0154	<0.0002
	ACCSSS0013	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.001	0.0003	0.0002	<0.0002	<0.0002	0.0002	0.001	0.0004	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0014	0.002	0.003	0.0089	0.0002	0.0041	0.0002
	ACCSSS0014	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0034	0.0018	0.0002	<0.0002	<0.0002	0.0005	0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0055	0.0016	0.002	0.0152	<0.0002	0.0125	<0.0002
	ACCSSS0015	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0008	0.003	0.0008	0.0048	0.0015	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.318	0.0035	0.001	0.334	<0.0002	0.331	<0.0002
	ACCSSS0016	20/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0006	0.0009	<0.0002	<0.0002	<0.0002	0.0002	0.0005	0.0005	0.0003	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0078	0.0018	0.0135	0.0261	<0.0002	0.0111	<0.0002
Mulla Mulla Village WWTP and Irrigation Area	ACCSSS0017	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0018	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0019	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0020	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0021	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0022	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0023	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0024	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0025	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0026	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0027	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0028	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0029	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0030	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0031	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0032	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0033	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0034	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0008	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0002	0.0012	<0.0002
	ACCSSS0035	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0036	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0037	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0038	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0039	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
New Putrescible Landfill	ACCSSS0040	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0041	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0042	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0043	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
New fire fighting training ground	ACCSSS0048	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	0.0002	0.0026	0.0008	0.0003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0244	0.0022	0.0009	0.0314	<0.0002	0.0294	<0.0002
	ACCSSS0049	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0007	0.0003	0.0007	0.0009	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0052	0.0025	0.002	0.0127	<0.0002	0.0094	<0.0002
	ACCSSS0050	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0006	0.0003	0.002	0.0022	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0108	0.0053	0.0011	0.0225	<0.0002	0.019	<0.0002
	ACCSSS0051	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0004	<0.0002	0.0005	0.0007	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0047	0.0032	0.003	0.0129	<0.0002	0.0088	<0.0002
	ACCSSS0052	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0007	0.0009	0.0003	0.0014	0.0018	0.001	0.0003	0.0004	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.015	0.011	0.0064	0.0392	<0.0002	0.0293	<0.0002
	ACCSSS0053	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0003	0.0017	0.001	0.0041	0.0035	0.0011	0.0004	0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0254	0.012	0.0042	0.0542	<0.0002	0.0445	<0.0002
	ACCSSS0054	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0005	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0079	0.0022	0.0007	0.0115	<0.0002	0.0106	<0.0002
	ACCSSS0055	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.001	<0.0002	0.0006	0.0007	0.0009	0.0003	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0426	0.0099	0.0042	0.0605	<0.0002	0.0541	<0.0002
	ACCSSS0056	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0009	<0.0002	0.0004	0.0006	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0176	0.0032	0.0018	0.0247	<0.0002	0.0221	<0.0002

			Perfluorocarbons																																
			2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	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-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 PFHxS and PFOS	Sum of WA DWER PFAS	Sum of PFHxS and PFOS
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002		0.0002
PFAS NEMP 2020 Table 2 Residential with garden/accessible														0.1																		0.01		0.01
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access														20																		2		2
PFAS NEMP 2020 Table 2 Public open space														10																		1		1
PFAS NEMP 2020 Table 3 Ecological direct exposure								1						10																					
PFAS NEMP 2020 Table 3 Ecological indirect exposure								0.01																											
Inert Landfill	ACCSSS0057	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSS0058	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
MaC medical centre (emergency vehicle washdown area)	ACCSSS0059	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0006	0.0004	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.001	0.0029	0.0033	0.0086	<0.0002	0.0049	<0.0002
	ACCSSS0060	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.005	0.0047	0.0017	0.0443	0.001	0.0003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.486	0.011	0.0047	0.56	<0.0002	0.554	<0.0002
	ACCSSS0061	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0019	0.0094	0.0072	0.0187	<0.0002	0.0113	<0.0002
	ACCSSS0062	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0023	0.0111	0.0108	0.0251	<0.0002	0.0137	<0.0002
	ACCSSS0063	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0004	<0.0002	<0.0002	0.0003	0.0011	0.0021	0.0005	0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0125	0.105	0.0145	0.137	<0.0002	0.118	<0.0002
	ACCSSS0064	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	0.0009	0.001	0.0043	0.002	0.0025	0.0007	0.0007	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0092	0.15	0.047	0.218	<0.0002	0.16	<0.0002
	ACCSSS0065	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	0.0041	0.0043	0.0052	0.0016	0.002	0.0006	0.0006	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0502	0.112	0.0363	0.217	<0.0002	0.166	<0.0002
	ACCSSS0066	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	0.004	0.0016	0.0023	0.0007	0.0006	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0016	0.0771	0.034	0.122	<0.0002	0.0787	<0.0002
Heavy vehicle workshop	ACCSSS0067	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.009	0.0227	0.0175	0.0003	0.0004	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.183	0.013	0.0026	0.249	<0.0002	0.246	<0.0002
	ACCSSS0068	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.004	0.0057	0.0072	0.0003	0.0006	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.183	0.0232	0.0056	0.23	<0.0002	0.224	<0.0002
	ACCSSS0069	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.003	0.0034	0.0101	<0.0002	0.0003	<0.0002	0.0005	<0.0002	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.191	0.0286	0.0105	0.248	<0.0002	0.236	<0.0002
	ACCSSS0070	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0008	0.0048	0.0007	0.0032	0.0003	0.0018	<0.0002	0.0008	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.969	0.0894	0.0288	1.1	<0.0002	1.07	<0.0002
	ACCSSS0071	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.0036	0.0026	0.0004	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.062	0.0067	0.0026	0.0792	<0.0002	0.0766	<0.0002
	ACCSSS0072	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0031	0.0046	0.0014	0.0006	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.145	0.0169	0.0053	0.179	<0.0002	0.174	<0.0002
	ACCSSS0073	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0003	0.0011	<0.0002	0.0006	<0.0002	0.0005	<0.0002	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.219	0.0365	0.0178	0.276	<0.0002	0.258	<0.0002
	ACCSSS0074	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.001	<0.0002	0.0013	<0.0002	0.0008	<0.0002	0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.403	0.0539	0.0294	0.49	<0.0002	0.459	<0.0002
	ACCSSS0075	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.001	0.002	<0.0002	0.0008	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.155	0.0136	0.0051	0.178	<0.0002	0.172	<0.0002
	ACCSSS0076	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0009	0.001	<0.0002	0.0006	<0.0002	0.0004	<0.0002	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.113	0.022	0.0105	0.149	<0.0002	0.138	<0.0002
	ACCSSS0077	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.0022	0.0005	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0006	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0112	0.0145	0.0222	0.0528	<0.0002	0.0294	<0.0002
	ACCSSS0078	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.005	0.0036	0.0004	0.0007	<0.0002	0.0006	<0.0002	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.15	0.0294	0.0153	0.207	<0.0002	0.191	<0.0002
	ACCSSS0079	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002	0.0039	0.0051	0.0002	0.0006	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.188	0.0175	0.0061	0.224	<0.0002	0.217	<0.0002
	ACCSSS0080	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.003	0.0053	0.0031	0.0002	0.0007	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0846	0.0088	0.0035	0.11	<0.0002	0.106	<0.0002
	ACCSSS0081	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0022	0.0009	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0324	0.0159	0.0084	0.0604	<0.0002	0.0514	<0.0002
	ACCSSS0082	21/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0008	<0.0002	0.0017	<0.0002	0.0008	<0.0002	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.33	0.0392	0.0177	0.39	<0.0002	0.372	<0.0002
New and old washdown bays and evaporation ponds	ACCSSS0083	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.008	0.0108	0.0087	0.0007	0.0003	0.0003	0.0008	<0.0002	0.0003	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.007	0.0128	0.0038	0.0535	<0.0002	0.0483	<0.0002
	ACCSSS0084	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0006	0.0007	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0004	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0028	<0.0005	0.0031	0.0079	<0.0002	0.0041	<0.0002
	ACCSSS0085	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0009	0.0011	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0013	0.0006	0.0005	0.0052	<0.0002	0.0039	<0.0002
	ACCSSS0086	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0006	0.001	<0.0002	0.0002	<0.0002	0.001	<0.0002	0.0004	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0009	0.0044	0.0085	<0.0002	0.0027	<0.0002	
Medical Centre BioMax Facility	ACCSSS0099	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0100	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0101	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0007	0.0006	<0.0002	0.0007	0.0007	0.004	0.0006	0.0034	0.0004	0.0006	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0117	<0.0002	0.002	<0.0002
	ACCSSS0102	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
Core Shed BioMax Facility	ACCSSS0111	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0112	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0113	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0114	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
Workshop BioMax Facility	ACCSSS0115	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0016	0.002	0.0003	<0.0002	0.0005	0.002	<0.0002	0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0059	0.0015	0.0014	0.0154	<0.0002	0.0113	<0.0002
	ACCSSS0116	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0006	0.001	0.0016	0.004	<0.0002	0.0019	<0.0002
	ACCSSS0117	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0118	22/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0002	<0.0002	0.0002	<0.0002
Storage Yard BioMax Facility	ACCSSS0119	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.003	0.0014	0.0018	0.0029	0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	0.0005	0.0104	<0.0002	0.0093	<0.0002
	ACCSSS0120	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0121	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSS0122	23/08/2021	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0002	0.0003	<0.0002
Statistics																																			
Minimum Concentration			<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0000	<0.0002	0.001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0004	0.0006	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0006	0.0006	0.0005	0.0002	0.0000	0.0002	0.0000
Maximum Concentration			<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.009	0.0572	0.023	0.0116	0.0443	0.0043	0.0052	0.002	0.0034	0.0007	0.0007	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.969	0.15	0.047	1.1	0.0005	1.07	0.0005
Average Concentration *			0.00025	0.0001	0.0001	0.0001	0.0001	0.00011	0.0001	0.00085	0.0013	0.0013	0.0003	0.00079	0.00029	0.00044	0.00016	0.00025	0.00012	0.00026	0.0001	0.00025	0.00025	0.00025	0.0001	0.0001	0.00025	0.039	0.0085	0.0039	0.056	0.00011	0.051	0.00011
Standard Deviation *			0	0	0	0	0	0.000042	0	0.0013	0.0057	0.0034	0.0011	0.0041	0.00059	0.00084	0.00027	0.00048	0.000095	0.000068	0	0	0	0	0	0	0	0.12	0.023	0.008	0.14	0.000042	0.13	0.000042
% of Detects			0	0	0	0	0	3	0	13	33	40	20	28	21	40	10	24	4	3	0	0	0	0	0	0	0	44	40	42	50	3	50	3
% of Non-Detects			100	100	100	100	100	97	100	87	67	60	80	72	79	60	90	76	96	97	100	100	100	100	100	100	100	56	60	58	50	97	50	97

* A Non Detect Multiplier of 0.5 has been applied.

			Perfluorocarbons																														
			2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	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-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 WA DWER PFAS	Sum of PFHxS and PFOS
			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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.000001	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0002	0.0002	0.0002
PFAS NEMP 2020 Table 1 Health Drinking Water														0.56																			0.07
PFAS NEMP 2020 Table 1 Health Recreational Water														5.6																			2
PFAS NEMP 2020 Table 5 Freshwater 99								0.00023						19																			
Site ID	**Field ID**	**Date**																															
Coondawanna Airport	ACCSSS0001	20/08/2021	<0.000001	0.0008	<0.0005	0.0025	<0.0005	0.0016	<0.0005	<0.0020	<0.0005	0.013	0.0126	0.0092	0.0023	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.363	0.005	<0.001	0.411	0.408	0.0041
	ACCSSS0002	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0115	<0.0005	0.0024	0.0032	0.0014	0.0016	0.0055	0.029	0.0176	0.0021	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.005	0.019	<0.001	0.0983	0.0496	0.0115
	ACCSSS0003	20/08/2021	<0.000001	0.0053	<0.0005	0.0006	<0.0005	0.002	<0.0005	0.0406	0.0846	0.0292	0.0025	0.0035	0.0009	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.043	0.002	<0.001	0.215	0.213	0.0026
	ACCSSS0004	20/08/2021	<0.000001	0.0008	<0.0005	0.0007	<0.0005	0.0018	<0.0005	<0.0020	<0.0005	0.0012	<0.0005	0.0033	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.052	0.001	<0.001	0.0619	0.0608	0.0025
	ACCSSS0005	20/08/2021	<0.000001	0.0007	<0.0005	<0.0005	<0.0005	0.002	<0.0005	0.0174	0.0289	0.0064	0.0015	0.0018	0.0019	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.038	<0.001	<0.001	0.0986	0.0967	0.002
	ACCSSS0006	20/08/2021	<0.000001	0.0007	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.005	<0.001	<0.001	0.0076	0.0076	0.0012
	ACCSSS0007	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0067	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	0.0006	0.0009	0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.008	<0.001	<0.001	0.0177	0.0153	0.0067
	ACCSSS0008	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.004	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	0.0005	0.0006	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	0.002	<0.001	0.0079	0.0065	0.004
	ACCSSS0009	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0018	0.0018	0.0018
	ACCSSS0010	20/08/2021	<0.000001	0.0024	<0.0005	0.0032	0.0014	0.0021	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.006	<0.001	<0.001	0.0171	0.0157	0.0053
	ACCSSS0011	20/08/2021	<0.000001	0.0006	<0.0005	<0.0005	<0.0005	0.0076	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.002	0.003	<0.001	0.0146	0.0132	0.0076
	ACCSSS0012	20/08/2021	<0.000001	0.001	<0.0005	0.0006	<0.0005	0.0073	<0.0005	0.005	0.0041	0.0097	0.0066	0.0064	0.0084	0.0023	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.432	0.018	<0.001	0.501	0.491	0.0079
	ACCSSS0013	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0056	<0.0005	0.0114	0.0106	0.0108	0.0022	0.005	0.0074	0.0126	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.056	0.028	<0.001	0.15	0.13	0.0056
	ACCSSS0014	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	0.0294	0.156	0.0796	0.0098	0.0037	0.0034	0.0095	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.178	0.035	<0.001	0.506	0.492	0.0007
	ACCSSS0015	20/08/2021	<0.000001	<0.0005	<0.0005	0.0006	<0.0005	0.0007	<0.0005	0.0157	0.0386	0.136	0.0354	0.224	0.0606	0.0111	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	16.4	0.088	0.002	17	16.9	0.0013
	ACCSSS0016	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0255	0.0335	0.0516	0.0082	0.0064	0.0037	0.0069	0.0039	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.417	0.052	0.01	0.619	0.594	<0.0002
Mulla Mulla Village WWTP and Irrigation Area	ACCSSS0017	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSS0018	23/08/2021	<0.000001	0.0007	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0029	0.0014	0.0008	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0069	0.0069	<0.0002
	ACCSSS0019	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.002	0.0007	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0018	0.0018	0.0005
	ACCSSS0020	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0003	<0.0005	<0.002	0.0008	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0017	0.0017	0.0003
	ACCSSS0021	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0012	0.0006	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0025	0.0025	<0.0002
	ACCSSS0022	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0021	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0021	0.0021	0.0021
	ACCSSS0023	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0015	0.001	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.003	0.003	<0.0002
	ACCSSS0024	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0008	0.0008	<0.0002
	ACCSSS0025	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0002	<0.0005	<0.002	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0007	0.0007	0.0002
	ACCSSS0026	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0002	<0.0005	<0.002	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0008	0.0008	0.0002
	ACCSSS0027	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0004	0.0004	0.0004
	ACCSSS0028	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0006	0.0006	<0.0002
	ACCSSS0029	23/08/2021	<0.000001	0.0009	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0018	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0039	0.0039	<0.0002
	ACCSSS0030	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0006	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0018	0.0018	<0.0002
	ACCSSS0031	23/08/2021	<0.000001	0.0007	<0.0005	<0.0005	<0.0005	0.0011	<0.0005	0.0026	0.0024	0.0012	0.0009	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0107	0.0107	0.0011
	ACCSSS0032	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSS0033	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0004	0.0004	0.0004
	ACCSSS0034	23/08/2021	<0.000001	0.0041	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0266	0.0378	0.0112	0.0008	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.081	0.081	<0.0002
	ACCSSS0035	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSS0036	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0007	0.0007	0.0007
	ACCSSS0037	23/08/2021	<0.000001	0.003	<0.0005	0.0005	<0.0005	0.0009	<0.0005	0.0045	0.0014	0.0027	0.0012	0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0157	0.0157	0.0014
	ACCSSS0038	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0012	0.0007	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0038	0.0023	0.0011
	ACCSSS0039	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0016	0.0016	0.001
New Putrescible Landfill	ACCSSS0040	21/08/2021	<0.000001	0.0007	<0.0005	<0.0005	<0.0005	0.001	<0.0005	0.0022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0039	0.0039	0.001
	ACCSSS0041	21/08/2021	<0.000001	0.0006	<0.0005	<0.0005	<0.0005	0.0003	<0.0005	0.0026	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0035	0.0035	0.0003
	ACCSSS0042	21/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001
	ACCSSS0043	21/08/2021	<0.000001	0.0016	<0.0005	<0.0005	<0.0005	0.0026	<0.0005	<0.002	<0.0005	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0053	0.0053	0.0026
New fire fighting training ground	ACCSSS0048	21/08/2021	<0.000001	<0.0005	<0.0005	0.0007	<0.0005	0.0014	<0.0005	0.0021	0.0018	0.0067	0.012	0.114	0.0295	0.0065	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.94	0.05	<0.001	1.16	1.13	0.0021
	ACCSSS0049	21/08/2021	<0.000001	0.0009	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	0.0029	0.0017	0.0384	0.0178	0.0358	0.0424	0.0126	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.284	0.088	0.001	0.528	0.47	0.0009
	ACCSSS0050	21/08/2021	<0.000001	0.0006	<0.0005	<0.0005	<0.0005	0.0004	<0.0005	0.0029	0.0017	0.0279	0.0183	0.0687	0.0916	0.0067	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.301	0.138	<0.001	0.659	0.56	0.0004
	ACCSSS0051	21/08/2021	<0.000001	0.001	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	0.0024	0.001	0.0198	0.0087	0.0278	0.0416	0.0168	0.0036	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.215	0.135	0.004	0.477	0.411	0.0005
	ACCSSS0052	21/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	0.0339	0.0404	0.031	0.0151	0.0632	0.0797	0.0271	0.0042	0.0006	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.676	0.479	0.002	1.45	1.34	0.0013
	ACCSSS0053	21/08/2021	<0.000001	0.0008	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	0.0247	0.0154	0.0765	0.0468	0.145	0.106	0.0182	0.0025	0.0008	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.72	0.208	0.001	1.37	1.24	0.0005
	ACCSSS0054	21/08/2021	<0.000001	0.0007	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	0.0046	0.002	0.0246	0.0048	0.0067	0.0098	0.0061	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.412	0.07	<0.001	0.543	0.527	0.0012
	ACCSSS0055	21/08/2021	<0.000001	0.0011	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	0.0084	0.0061	0.04	0.0073	0.0271	0.0234	0.0085	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.001	<0.001	<0.0005	<0.0005	<0.001	1.6	0.104	<0.001	1.83	1.8	0.0014
	ACCSSS0056	21/08/2021	<0.000001	0.0012	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	0.0025	0.0032	0.0369	0.008	0.0215	0.0318	0.0062	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.905	0.097	<0.001	1.11	1.08	0.0005

			Perfluorocarbons																														
			2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	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-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 WA DWER PFAS	Sum of PFHxS and PFOS
			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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.000001	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0002	0.0002	0.0002
PFAS NEMP 2020 Table 1 Health Drinking Water														0.56																			0.07
PFAS NEMP 2020 Table 1 Health Recreational Water														5.6																			2
PFAS NEMP 2020 Table 5 Freshwater 99								0.00023						19																			
Inert Landfill	ACCSSS0057	21/08/2021	<0.000001	0.0008	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.002	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.002	<0.001	<0.001	0.004	0.004	0.0007
	ACCSSS0058	21/08/2021	<0.000001	0.0008	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.002	<0.0005	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.007	<0.001	<0.001	0.0097	0.0097	0.0009
MaC medical centre (emergency vehicle washdown area)	ACCSSS0059	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	0.004	0.0163	0.016	0.0027	0.0043	0.0025	0.007	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.034	0.064	0.002	0.154	0.142	0.0005
	ACCSSS0060	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0579	0.179	0.178	0.0742	1.51	0.0301	0.009	0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.004	22.3	0.276	0.006	24.6	24.6	<0.0002
	ACCSSS0061	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0021	0.0082	0.0064	0.0016	0.0048	0.0017	0.0034	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.062	0.125	0.002	0.218	0.21	<0.0002
	ACCSSS0062	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0058	0.013	0.0096	0.0022	0.0045	0.0074	0.0082	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.085	0.248	0.001	0.385	0.368	<0.0002
	ACCSSS0063	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	0.0108	0.0344	0.0186	0.0039	0.0252	0.0622	0.0754	0.0072	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	1.04	2.33	0.01	3.62	3.46	0.001
	ACCSSS0064	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	<0.0005	<0.002	0.007	0.0113	0.0078	0.0539	0.0381	0.107	0.023	0.0039	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.407	3.32	0.051	4.03	3.81	0.0011
	ACCSSS0065	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0027	<0.0005	<0.002	0.0014	0.0031	0.0027	0.0775	0.117	0.188	0.0329	0.0051	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.974	3.84	0.042	5.29	4.9	0.0027
	ACCSSS0066	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0046	<0.0005	0.0021	<0.0005	0.0031	0.003	0.0086	0.0301	0.156	0.0197	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.091	4.44	0.002	4.76	4.55	0.0046
Heavy vehicle workshop	ACCSSS0067	21/08/2021	<0.000001	<0.0005	0.0005	0.0028	<0.0005	0.0097	<0.0005	0.431	1.23	93.3	0.0182	0.0209	0.0018	0.0086	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.008	8.05	0.32	0.004	103	103	0.0125
	ACCSSS0068	21/08/2021	<0.000001	<0.0005	<0.0005	0.0034	<0.0005	0.0047	<0.0005	0.0736	0.206	0.298	0.0149	0.0249	0.0024	0.0097	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.004	6.88	0.26	0.005	7.79	7.76	0.0081
	ACCSSS0069	21/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	0.0038	0.0765	0.148	0.35	0.0058	0.0145	0.0017	0.0143	<0.0005	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.004	6.61	0.684	0.038	7.95	7.89	0.0005
	ACCSSS0070	21/08/2021	<0.000001	<0.0005	<0.0005	0.0006	<0.0005	0.0004	<0.0005	0.0653	0.0508	0.4	0.0501	0.236	0.0147	0.0541	0.0007	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.005	48	2.21	0.023	51.1	51	0.001
	ACCSSS0071	21/08/2021	<0.000001	<0.0005	<0.0005	0.0048	<0.0005	0.0038	<0.0005	0.0555	0.216	0.148	0.0236	0.0163	0.002	0.0072	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	3.22	0.202	0.008	3.91	3.89	0.0086
	ACCSSS0072	21/08/2021	<0.000001	<0.0005	<0.0005	0.0048	<0.0005	0.0039	<0.0005	0.0363	0.144	0.182	0.0546	0.0253	0.004	0.0109	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.001	5.1	0.378	0.009	5.95	5.93	0.0087
	ACCSSS0073	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0075	0.0075	0.0555	0.0054	0.0226	0.0032	0.0149	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	8.46	0.768	0.015	9.36	9.33	<0.0016
	ACCSSS0074	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0027	0.0035	0.0611	0.0061	0.0493	0.0051	0.0211	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	14.3	1.15	0.021	15.6	15.6	<0.0016
	ACCSSS0075	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0152	0.017	0.0867	0.0043	0.0261	0.0022	0.0048	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	5.19	0.178	0.002	5.53	5.52	<0.0016
	ACCSSS0076	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0194	0.0222	0.055	0.0053	0.0219	0.0019	0.0101	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	2.36	0.418	0.007	2.92	2.9	<0.0016
	ACCSSS0077	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	0.0019	<0.0016	0.0117	0.0227	0.0118	<0.0016	0.0021	<0.0016	0.0117	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	0.29	0.215	0.008	0.575	0.555	0.0019
	ACCSSS0078	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0446	0.115	0.167	0.0176	0.0253	0.0026	0.0117	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	6.23	0.526	0.01	7.15	7.12	<0.0016
	ACCSSS0079	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0306	0.0701	0.208	0.0074	0.0206	0.0018	0.0082	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	7.24	0.282	0.004	7.87	7.86	<0.0016
	ACCSSS0080	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0774	0.152	0.178	0.0098	0.0291	0.0022	0.0064	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	3.6	0.162	0.003	4.22	4.21	<0.0016
	ACCSSS0081	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0266	0.0614	0.0504	0.0027	0.0061	<0.0016	0.0069	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	1.28	0.26	0.006	1.7	1.69	<0.0016
	ACCSSS0082	21/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.002	0.0066	0.0411	0.0035	0.0522	0.0051	0.0138	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	13.1	0.679	0.009	13.9	13.9	<0.0016
New and old washdown bays and evaporation ponds	ACCSSS0083	22/08/2021	<0.000001	0.0133	<0.0005	<0.0005	<0.0005	0.0027	<0.0005	0.215	1	0.689	0.0877	0.0295	0.0124	0.0157	0.0031	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.358	0.248	0.004	2.68	2.64	0.0027
	ACCSSS0084	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0029	0.0282	0.0229	0.0048	0.0022	0.0025	0.0036	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.25	0.014	0.001	0.332	0.325	<0.0002
	ACCSSS0085	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0133	0.0909	0.0464	0.009	0.0045	0.0013	0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.166	0.027	<0.001	0.361	0.357	<0.0002
	ACCSSS0086	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0046	0.0205	0.0264	0.0093	0.0117	0.0033	0.0144	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.01	0.026	0.001	0.128	0.108	<0.0002
Medical Centre Biomax Facility	ACCSSS0099	22/08/2021	<0.000001	0.0013	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.003	0.003	<0.001	0.0086	0.0086	0.0013
	ACCSSS0100	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.016	0.003	<0.001	0.0208	0.0208	0.0009
	ACCSSS0101	22/08/2021	<0.000001	0.0022	<0.0005	<0.0005	<0.0005	0.0008	<0.0005	0.0064	0.0216	0.0114	0.0074	0.0224	0.0088	0.0204	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.006	0.005	<0.001	0.113	0.0832	0.0008
	ACCSSS0102	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0008	0.0006	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.015	0.006	<0.001	0.0249	0.0235	0.0017
Core Shed Biomax facility	ACCSSS0111	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0012	0.0012	0.0012
	ACCSSS0112	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSS0113	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	<0.002	<0.0005	0.0008	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.003	0.0025	0.0017
	ACCSSS0114	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0018	0.0018	0.0009
Workshop Biomax facility	ACCSSS0115	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0032	<0.0005	0.0026	0.0149	0.0185	0.0053	0.0052	0.0071	0.0064	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.166	0.026	<0.001	0.255	0.242	0.0032
	ACCSSS0116	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	0.0052	0.0047	0.0085	0.001	0.0022	0.0015	0.0056	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.045	0.022	<0.001	0.097	0.0899	0.0013
	ACCSSS0117	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0037	0.0022	0.0018	0.0006	0.0017	0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.014	0.003	<0.001	0.0286	0.0253	<0.0002
	ACCSSS0118	22/08/2021	<0.000001	0.0006	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	0.004	0.0095	0.007	0.0018	0.0009	0.0012	0.0026	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.013	0.012	<0.001	0.0532	0.0494	0.0006
Storage Yard Biomax facility	ACCSSS0119	23/08/2021	<0.000001	0.0093	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	0.138	0.286	0.38	0.146	0.0084	0.0044	0.008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.02	0.004	<0.001	1	0.994	0.0018
	ACCSSS0120	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	0.0006	0.0066	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0072	0.0072	<0.0002
	ACCSSS0121	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0003	<0.0005	<0.002	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.007	<0.001	<0.001	0.0089	0.0079	0.0003
	ACCSSS0122	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	<0.002	0.016	0.0109	0.0021	0.0016	0.0016	0.0042	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.013	0.002	<0.001	0.0528	0.047	0.0014

Statistics

Maximum Concentration			<0.000004	0.0133	<0.0016	0.0048	<0.0016	0.0115	0.0038	0.431	1.23	93.3	0.416	1.51	0.117	0.188	0.0329	0.0051	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	0.008	48	4.44	0.109	103	103	0.0125
Average Concentration *			0.00000064	0.00076	0.0003	0.00049	0.00031	0.0014	0.00033	0.016	0.05	0.83	0.011	0.028	0.0085	0.009	0.0012	0.00042	0.0003	0.00041	0.00031	0.00064	0.00064	0.00064	0.0003	0.0003	0.00074	1.8	0.22	0.004	3	3	0.0016
Standard Deviation *			0.00000044	0.0016	0.00016	0.00076	0.00019	0.0021	0.00036	0.049	0.18	8.5	0.042	0.14	0.021	0.025	0.0041	0.00061	0.00016	0.00051	0.00017	0.00044	0.00044	0.00044	0.00016	0.00016	0.00096	5.8	0.68	0.012	11	11	0.0025
% of Detects			0	29	1	11	1	64	1	48	60	63	54	61	53	53	21	8	0	0	2	0	0	0	0	0	5	59	54	32	90	90	64
% of Non-Detects			100	71	99	89	99	36	99	52	40	37	46	39	47	47	79	92	100	100	98	100	100	100	100	100	95	41	46	68	10	10	36

* A Non Detect Multiplier of 0.5 has been applied.

			Inorganics		Perfluorocarbons																	
			Moisture Content	pH (Final)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)
			%	pH Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
PFAS NEMP 2020 Table 2 Residential with garden/accessible																0.1						
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access																20						
PFAS NEMP 2020 Table 2 Public open space																10						
PFAS NEMP 2020 Table 3 Ecological direct exposure										1						10						
PFAS NEMP 2020 Table 3 Ecological indirect exposure										0.01												
Site ID	**Field ID**	**Date**																				
Western, Central and Eastern Infiltration Ponds	ACCSSD0002	19/08/2021	16.7	7.7	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0003	19/08/2021	24.2	7.6	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0004	19/08/2021	11.5	8.6	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0005	20/08/2021	21.4	8.8	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0006	20/08/2021	1.1	7.9	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0007	20/08/2021	1.8	7.8	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0008	20/08/2021	18.2	8.6	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0009	20/08/2021	23.1	8.5	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0010	20/08/2021	23.6	8.7	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0011	20/08/2021	23.8	8.9	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0012	20/08/2021	4.7	8.6	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0013	20/08/2021	1.5	8.7	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0014	20/08/2021	0.8	8.0	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Packsaddle WWTP	ACCSSD0015	20/08/2021	26.3	8.0	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0016	20/08/2021	19.3	7.6	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0017	20/08/2021	44.7	8.8	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0005	0.0002	0.0004	0.0004	0.0003	<0.0002	<0.0002	<0.0002	<0.0002
Heavy vehicle workshops	ACCSSD0021	22/08/2021	30.6	5.3	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.0022	0.0164	0.0014	<0.0002	<0.0002	0.0004	<0.0002	0.0014	<0.0002	<0.0002
	ACCSSD0022	22/08/2021	38.5	6.5	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0009	0.0065	0.0005	<0.0002	0.0003	0.0006	0.0004	0.0009	<0.0002	<0.0002
New and old washdown bays and evaporation ponds	ACCSSD0023	22/08/2021	22.9	6.6	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	ACCSSD0024	22/08/2021	38.6	6.7	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0003	0.0014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Bioremediation Farm	ACCSSD0025	20/08/2021	13.3	8.0	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.007	0.0572	0.023	0.0116	0.0047	0.0009	0.0017	<0.0002	0.0005	<0.0002	
Statistics																						
Maximum Concentration			44.7	9.8	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.007	0.057	0.023	0.012	0.005	0.001	0.002	0.000	0.001	0.000	
Average Concentration *			7.3	7.5	0.00025	0.0001	0.0001	0.0001	0.0001	0.00011	0.0001	0.004	0.01515	0.00956	0.003425	0.00255	0.00053333	0.00075	0.0004	0.00093333	<0.0002	
Standard Deviation *			9.6	1.1	0	0	0	0	0	0.000042	0	0.0013	0.0057	0.0034	0.0011	0.0041	0.00059	0.00084	0.00027	0.00048	0.000095	
% of Detects			98	100	0	0	0	0	0	3	0	13	33	40	20	28	21	40	10	24	4	
% of Non-Detects			2	0	100	100	100	100	100	97	100	87	67	60	80	72	79	60	90	76	96	

* A Non Detect Multiplier of 0.5 has been applied.

	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	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 WA DWER PFAS	Sum of PFHxS and PFOS
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.0005	0.0002	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002		0.0002
PFAS NEMP 2020 Table 2 Residential with garden/accessible														0.01
PFAS NEMP 2020 Table 2 Residential with minimal opportunities for soil access														2
PFAS NEMP 2020 Table 2 Public open space														1
PFAS NEMP 2020 Table 3 Ecological direct exposure														
PFAS NEMP 2020 Table 3 Ecological indirect exposure														
Site ID	**Field ID**	**Date**												
Western, Central and Eastern Infiltration Ponds	ACCSSD0002	19/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0003	19/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0004	19/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0005	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0006	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0007	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0008	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0009	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0010	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0011	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0012	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0013	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0014	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
Packsaddle WWTP	ACCSSD0015	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0016	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002
	ACCSSD0017	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	0.0027	0.0045	0.0011	<0.0002
Heavy vehicle workshops	ACCSSD0021	22/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0578	0.0062	0.0177	0.104	0.085	<0.0002
	ACCSSD0022	22/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0622	0.0045	0.0091	0.0859	0.0746	<0.0002
New and old washdown bays and evaporation ponds	ACCSSD0023	22/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0008	<0.0005	<0.0005	0.0008	0.0008	<0.0002
	ACCSSD0024	22/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0057	<0.0005	0.0017	0.0091	0.0074	<0.0002
Bioremediation Farm	ACCSSD0025	20/08/2021	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0005	0.0015	0.0118	0.121	0.106	0.0005

Statistics

Maximum Concentration	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.062	0.006	0.018	0.121	0.106	0.001
Average Concentration *	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0254	0.0041	0.0086	0.0542	0.0458	0.0005
Standard Deviation *	0.000068	0	0	0	0	0	0	0	0.12	0.023	0.008	0.14	0.13	0.000042
% of Detects	3	0	0	0	0	0	0	0	44	40	42	50	50	3
% of Non-Detects	97	100	100	100	100	100	100	100	56	60	58	50	50	97

* A Non Detect Multiplier of 0.5 has been applied.

			Perfluorocarbons																	
			2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)
			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	µg/L	µg/L	µg/L
EQL			0.000001	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001
PFAS NEMP 2020 Table 1 Health Drinking Water														0.56							
PFAS NEMP 2020 Table 1 Health Recreational Water														5.6							
PFAS NEMP 2020 Table 5 Freshwater 99%								0.00023						19							
Site ID	**Field ID**	**Date**																			
Western, Central and Eastern Infiltration Ponds	ACCSSD0002	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0003	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0004	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0005	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0006	20/08/2021	<0.000001	0.0006	<0.0005	<0.0005	<0.0005	0.0003	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0007	20/08/2021	<0.000001	0.0006	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0008	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0009	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0010	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0011	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0012	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0013	20/08/2021	<0.000001	0.0013	<0.0005	<0.0005	<0.0005	0.0004	<0.0005	0.0021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0014	20/08/2021	<0.000001	0.0010	<0.0005	<0.0005	<0.0005	0.0008	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Packsaddle WWTP	ACCSSD0015	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0016	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0017	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0020	0.0018	0.0115	0.0079	0.0077	0.0046	0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Heavy vehicle workshop Evapoartion Ponds	ACCSSD0021	22/08/2021	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.0182	0.0358	0.28	0.0483	0.0021	0.0019	0.0034	<0.0016	0.0024	<0.004	<0.0016	<0.004
	ACCSSD0022	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	0.0113	0.0472	0.257	0.0288	0.0021	0.0072	0.0086	0.0016	0.0006	<0.0005	<0.0005	<0.001
New and old washdown bays and evaporation ponds	ACCSSD0023	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	0.0048	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
	ACCSSD0024	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	0.0022	0.0131	0.0365	0.005	0.0015	0.0011	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Bioremediation Fram	ACCSSD0025	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	0.0112	<0.0005	0.148	1.14	0.561	0.416	0.138	0.0213	0.0120	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Statistics																					
Maximum Concentration			<0.000004	0.0133	<0.0016	0.0048	<0.0016	0.0115	0.0038	0.431	1.23	93.3	0.416	1.51	0.117	0.188	0.0329	0.0051	<0.004	<0.0016	<0.004
Average Concentration *			0.00000064	0.00076	0.0003	0.00049	0.00031	0.0014	0.00033	0.016	0.05	0.83	0.011	0.028	0.0085	0.009	0.0012	0.00042	0.00041	0.00031	0.00064
Standard Deviation *			0.00000044	0.0016	0.00016	0.00076	0.00019	0.0021	0.00036	0.049	0.18	8.5	0.042	0.14	0.021	0.025	0.0041	0.00061	0.00051	0.00017	0.00044
% of Detects			0	29	1	11	1	64	1	48	60	63	54	61	53	53	21	8	0	2	0
% of Non-Detects			100	71	99	89	99	36	99	52	40	37	46	39	47	47	79	92	100	98	100

* A Non Detect Multiplier of 0.5 has been applied.

			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 WA DWER PFAS	Sum of PFHxS and PFOS
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0002	0.0002	0.0002
PFAS NEMP 2020 Table 1 Health Drinking Water												0.07
PFAS NEMP 2020 Table 1 Health Recreational Water												2
PFAS NEMP 2020 Table 5 Freshwater 99%												
Site ID	**Field ID**	**Date**										
Western, Central and Eastern Infiltration Ponds	ACCSSD0002	19/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0003	19/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0004	19/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0005	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0006	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0009	0.0009	0.0003
	ACCSSD0007	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0013	0.0013	0.0007
	ACCSSD0008	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0009	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0010	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0011	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSD0012	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0011	0.0011	0.0011
	ACCSSD0013	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0038	0.0038	0.0004
	ACCSSD0014	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0018	0.0018	0.0008
Packsaddle WWTP	ACCSSD0015	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	0.001	<0.001	<0.001	0.0014	0.0014	0.0004
	ACCSSD0016	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	0.005	<0.001	<0.001	0.0056	0.0056	<0.0002
	ACCSSD0017	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0351	0.0289	<0.0002
Heavy vehicle workshop Evapoartion Ponds	ACCSSD0021	22/08/2021	<0.004	<0.0016	<0.0016	<0.002	22.6	0.145	0.109	23.2	23.1	<0.0016
	ACCSSD0022	22/08/2021	<0.001	<0.0005	<0.0005	<0.001	2.54	0.101	0.007	3.01	2.99	0.0009
New and old washdown bays and evaporation ponds	ACCSSD0023	22/08/2021	<0.001	<0.0005	<0.0005	<0.001	0.043	0.002	0.002	0.0518	0.0498	<0.0002
	ACCSSD0024	22/08/2021	<0.001	<0.0005	<0.0005	<0.001	0.288	0.008	0.002	0.359	0.354	<0.0002
Bioremediation Fram	ACCSSD0025	20/08/2021	<0.001	<0.0005	<0.0005	<0.001	0.005	0.011	0.004	2.47	2.43	0.0112

Statistics

Maximum Concentration	<0.004	<0.0016	<0.0016	0.008	48	4.44	0.109	103	103	0.0125
Average Concentration *	0.00064	0.0003	0.0003	0.00074	1.8	0.22	0.004	3	3	0.0016
Standard Deviation *	0.00044	0.00016	0.00016	0.00096	5.8	0.68	0.012	11	11	0.0025
% of Detects	0	0	0	5	59	54	32	90	90	64
% of Non-Detects	100	100	100	95	41	46	68	10	10	36

* A Non Detect Multiplier of 0.5 has been applied.

			Silica (Total Dissolved) by IC	Major Anions and Cations																					
			Silicon as SiO2	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Alkalinity (Bicarbonate as CaCO3)	Carbonate Alkalinity (as CaCO3)	Total Dissolved Solids (Calc.)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Electrical conductivity *(lab)	Fluoride	Ionic Balance	pH (Lab)	Sodium Absorption Ratio (filtered)	Hardness as CaCO3 (filtered)	Sulfate as SO4 - Turbidimetric (filtered)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MG/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	µS/cm	mg/L	%	pH_Units	-	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.1	1	1	1	1	1	1	10	1	1	0.01	0.01	1	1	0.1	0.01	0.01		1	1	0.000001	0.0005	0.0005	0.0005	0.0005
PFAS NEMP 2020 Table 1 Health Drinking Water																											
PFAS NEMP 2020 Table 1 Health Recreational Water																											
PFAS NEMP 2020 Table 5 Freshwater 99%																											
Site ID	**Field ID**	**Date**																									
Groundwater Monitoing Bores	GF0964R	21/08/2021	54.4	52	32	10	41	175	<1	462	<1	175	6.04	7.27	59	710	0.3	9.26	7.85	1.10	262	42	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	GF0965R	21/08/2021	44.1	43	26	11	30	156	<1	356	<1	156	4.82	5.87	42	548	0.2	9.82	7.93	0.89	214	25	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	PSA0598R	21/08/2021	28.5	47	30	10	54	203	<1	458	<1	203	7.54	7.42	77	705	0.5	0.81	7.42	1.51	241	63	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	SF2203R	21/08/2021	27.4	31	32	11	37	197	<1	370	<1	197	6.05	6.07	41	569	0.2	0.17	7.44	1.11	209	46	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
Production Bores	HGA0040P	22/08/2021	28.7	50	33	10	34	225	<1	424	<1	225	6.92	6.94	52	653	0.3	0.18	8.06	0.92	261	46	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGA0041P	22/08/2021	29.8	43	30	9	33	234	<1	444	<1	234	7.30	6.28	54	683	0.3	7.52	8.00	0.94	231	53	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGA0062P	22/08/2021	31.9	48	33	10	34	227	<1	448	<1	227	7.01	6.84	53	690	0.2	1.18	7.95	0.92	256	47	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGA0065P	22/08/2021	31.5	50	33	10	34	224	<1	424	<1	224	7.18	6.94	50	652	0.3	1.64	8.07	0.92	261	62	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGA0070P	22/08/2021	18.3	52	34	10	33	200	<1	412	<1	200	6.71	7.08	63	634	0.3	2.71	7.87	0.87	270	45	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGA0074P	22/08/2021	27.0	51	33	9	33	220	<1	439	<1	220	7.34	6.93	58	675	0.3	2.92	7.98	0.88	263	63	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGA0077P	22/08/2021	21.3	45	33	10	36	221	<1	426	<1	221	7.11	6.78	60	656	0.3	2.33	7.84	0.99	248	48	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0163P	22/08/2021	24.2	43	30	9	36	214	<1	431	<1	214	7.00	6.41	65	663	0.3	4.42	7.95	1.03	231	43	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0165P	22/08/2021	25.7	44	30	9	42	215	<1	435	<1	215	7.15	6.72	74	669	0.3	3.11	7.94	1.20	233	37	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0189P	22/08/2021	25.7	40	28	4	39	213	<1	403	<1	213	6.55	6.10	60	620	0.5	3.58	8.12	1.16	215	29	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0200P	22/08/2021	19.4	47	32	10	34	215	<1	430	<1	215	7.00	6.71	62	662	0.3	2.10	7.88	0.94	249	46	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0202P	22/08/2021	19.5	34	23	7	32	138	<1	353	<1	138	5.44	5.16	76	543	0.2	2.66	7.91	1.04	180	26	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0213P	22/08/2021	28.3	47	32	10	37	222	<1	424	<1	222	6.98	6.84	57	653	0.4	0.98	8.27	1.02	249	45	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0233P	22/08/2021	26.8	43	30	5	41	196	<1	409	<1	196	6.43	6.53	64	629	0.3	0.75	8.17	1.17	231	34	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0244P	22/08/2021	24.6	38	27	8	33	173	<1	368	<1	173	5.65	5.76	54	567	0.3	0.98	7.97	1.00	206	32	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0253P	22/08/2021	28.7	43	30	9	37	222	<1	413	<1	222	6.86	6.45	55	635	0.3	3.06	7.84	1.06	231	42	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGC0265P	22/08/2021	27.0	49	34	9	40	207	4	429	<1	212	6.80	7.21	59	660	0.4	2.98	8.33	1.07	262	43	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGE0148P	22/08/2021	34.9	44	29	10	30	209	<1	394	<1	209	6.12	6.14	40	607	0.3	0.22	8.06	0.86	229	39	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGE0192P	22/08/2021	23.1	51	35	10	33	193	<1	437	<1	193	6.21	7.12	48	672	0.3	6.81	8.02	0.87	271	48	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGE0201P	22/08/2021	30.0	49	36	10	36	194	<1	436	<1	194	6.31	7.23	53	671	0.3	6.81	7.96	0.95	271	45	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGE0236P	22/08/2021	23.6	48	35	10	34	196	<1	432	<1	196	6.30	7.01	50	664	0.3	5.30	7.99	0.91	264	47	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGE0243P	22/08/2021	36.4	45	30	10	30	212	<1	385	<1	212	6.18	6.28	40	592	0.3	0.80	8.10	0.85	236	39	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGE0246P	22/08/2021	34.3	45	29	10	30	212	<1	391	<1	212	6.13	6.19	39	602	0.3	0.54	8.00	0.86	232	38	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGE0252P	22/08/2021	27.4	51	34	10	33	206	<1	430	<1	206	6.43	7.03	48	661	0.3	4.51	8.01	0.88	267	46	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGSL0014P	24/08/2021	27.6	46	32	9	33	200	<1	424	<1	200	6.36	6.59	52	653	0.3	1.83	8.27	0.91	247	43	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HGSL0038P	24/08/2021	25.7	46	32	9	33	198	19	420	<1	217	6.67	6.59	51	647	0.3	0.56	8.52	0.91	247	43	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HNPIAC0001P	24/08/2021	35.6	57	37	10	27	227	<1	446	<1	227	6.72	7.32	45	687	0.3	4.26	8.04	0.68	295	44	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	HNPIAC0002P	24/08/2021	33.4	55	37	10	29	241	<1	456	<1	241	7.10	7.31	47	701	0.3	1.44	7.98	0.74	290	46	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
Statistics																											
Maximum Concentration			54.4	57	37	11	54	241	19	462	<1	241	7.54	7.42	77	710	0.5	9.82	8.52	1.51	295	63	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
Average Concentration *			29	46	32	9.3	35	206	1.2	419	0.5	207	6.6	6.7	55	645	0.31	3	8	0.97	245	44	0.0000005	0.00025	0.00025	0.00025	0.00025
Standard Deviation *			7.2	5.5	3.1	1.5	5	22	3.3	29	0	22	0.6	0.53	10	44	0.067	2.6	0.21	0.15	25	9	0	0	0	0	0
% of Detects			100	100	100	100	100	100	6	100	0	100	100	100	100	100	100	100	100	100	100	100	0	0	0	0	0
% of Non-Detects			0	0	0	0	0	0	94	0	100	0	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

			Perfluorocarbons																									
			Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	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-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 PFHxS and PFOS
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0002	0.0002	0.0002
PFAS NEMP 2020 Table 1 Health Drinking Water									0.56																			0.07
PFAS NEMP 2020 Table 1 Health Recreational Water									5.6																			2
PFAS NEMP 2020 Table 5 Freshwater 99%			0.00023						19																			
Site ID	**Field ID**	**Date**																										
Groundwater Monitoing Bores	GF0964R	21/08/2021	<0.0002	<0.0005	<0.0020	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0007	0.0007	<0.0002
	GF0965R	21/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	PSA0598R	21/08/2021	0.0031	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.006	<0.001	<0.001	0.0091	0.0091	0.0031
	SF2203R	21/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Production Bores	HGA0040P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0013	0.0013	<0.0002
	HGA0041P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGA0062P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGA0065P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGA0070P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGA0074P	22/08/2021	<0.0002	<0.0005	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0020	0.0020	<0.0002
	HGA0077P	22/08/2021	0.0003	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0003	0.0003	0.0003
	HGC0163P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGC0165P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGC0189P	22/08/2021	<0.0002	<0.0005	<0.0020	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0005	0.0005	<0.0002
	HGC0200P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGC0202P	22/08/2021	<0.0002	<0.0005	<0.0020	0.0010	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0016	0.0016	<0.0002
	HGC0213P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGC0233P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGC0244P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGC0253P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGC0265P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGE0148P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGE0192P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGE0201P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGE0236P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGE0243P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGE0246P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGE0252P	22/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGSL0014P	24/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HGSL0038P	24/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HNPIAC0001P	24/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	HNPIAC0002P	24/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Statistics																												
Maximum Concentration			0.0031	<0.0005	0.002	0.001	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.006	<0.001	<0.001	0.0091	0.0091	0.0031
Average Concentration *			0.0002	0.00025	0.001	0.0003	0.00029	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.0005	0.0005	0.0005	0.00025	0.00025	0.0005	0.00067	0.0005	0.0005	0.00056	0.00056	0.0002
Standard Deviation *			0.00053	0	0.00018	0.00016	0.00019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00097	0	0	0.0016	0.0016	0.00053
% of Detects			6	0	3	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	22	22	6
% of Non-Detects			94	100	97	91	94	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	97	100	100	78	78	94

* A Non Detect Multiplier of 0.5 has been applied.

			Silica (Total Dissolved) by IC	Major Anions and Cations																					
			Silicon as SiO2	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Alkalinity (Bicarbonate as CaCO3)	Carbonate Alkalinity (as CaCO3)	Total Dissolved Solids (Calc.)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Anions Total	Cations Total	Chloride	Electrical conductivity *(lab)	Fluoride	Ionic Balance	pH (Lab)	Sodium Absorption Ratio (filtered)	Hardness as CaCO3 (filtered)	Sulfate as SO4 - Turbidimetric (filtered)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MG/L	mg/L	mg/L	mg/L	meq/L	meq/L	mg/L	µS/cm	mg/L	%	pH_Units	-	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.1	1	1	1	1	1	1	10	1	1	0.01	0.01	1	1	0.1	0.01	0.01		1	1	0.000001	0.0005	0.0005	0.0005	0.0005
PFAS NEMP 2020 Table 1 Health Drinking Water																											
PFAS NEMP 2020 Table 1 Health Recreational Water																											
PFAS NEMP 2020 Table 5 Freshwater 99%																											
Site ID	**Field ID**	**Date**																									
Mulla Mulla WWTP	ACCSSW0001	24/08/2021	29.6	32	22	21	80	158	<1	514	<1	158	6.91	7.42	108	790	0.2	3.58	8.00	2.66	170	34	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
Western, Central and Eastern Infiltration Ponds	ACCSSW0003	19/08/2021	30.4	44	34	10	36	188	12	408	<1	200	6.44	6.82	54	627	0.3	2.87	8.44	0.99	250	44	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0004	19/08/2021	30.2	45	34	10	36	178	14	413	<1	191	6.28	6.86	55	635	0.3	4.42	8.44	0.98	252	44	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0005	19/08/2021	28.3	45	34	10	36	176	11	407	<1	188	6.22	6.86	55	626	0.3	4.90	8.43	0.98	252	44	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0006	20/08/2021	27.6	44	33	10	36	189	14	414	<1	204	6.49	6.73	53	637	0.3	1.86	8.43	1.00	246	44	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0009	20/08/2021	28.7	38	34	10	37	171	16	394	<1	187	6.50	6.56	55	606	0.3	0.49	8.52	1.05	235	58	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0010	20/08/2021	28.1	44	32	10	35	204	<1	412	<1	204	6.47	6.61	53	634	0.3	1.08	8.20	0.98	242	43	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0011	20/08/2021	27.8	45	35	10	37	193	14	404	<1	208	6.62	6.99	55	622	0.3	2.70	8.46	1.00	256	44	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0012	20/08/2021	27.4	48	34	10	36	184	5	411	<1	188	6.10	7.02	52	632	0.3	7.00	8.34	0.97	260	42	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
Packsaddle WWTP	ACCSSW0016	20/08/2021	34.7	33	28	25	90	132	130	524	<1	262	8.63	8.50	110	807	0.2	0.72	9.32	2.78	198	14	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0017	20/08/2021	19.4	30	24	31	114	181	96	601	<1	277	9.92	9.22	146	925	0.2	3.65	9.13	3.76	174	13	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0018	19/08/2021																					<0.000004	0.0132	<0.0016	<0.0016	<0.0016
Heavy vehicle workshop Evaporation Ponds	ACCSSW0019	22/08/2021	12.1	48	42	12	92	177	<1	623	<1	177	10.1	10.2	101	958	0.3	0.24	8.19	2.34	293	179	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0020	22/08/2021	5.7	40	44	13	94	135	6	626	<1	140	9.51	10.0	106	963	0.3	2.68	8.39	2.44	281	179	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
New and old washdown bays and evaporation ponds	ACCSSW0021	22/08/2021	27.2	51	36	11	55	271	<1	478	<1	271	8.10	8.18	67	736	0.3	0.53	7.79	1.44	276	38	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016
	ACCSSW0022	22/08/2021	28.7	52	37	11	59	306	<1	505	<1	306	8.69	8.49	72	777	0.4	1.16	7.88	1.53	282	26	<0.000004	<0.0016	<0.0016	<0.0016	<0.0016
Bioremediation Farm	ACCSSW0023	20/08/2021																					<0.000040	<0.0161	0.0822	<0.0161	<0.0161
Mulla Mulla WWTP	ACCSSW0030	24/08/2021	29.1	32	22	21	80	163	<1	516	<1	163	6.98	7.42	107	794	0.2	3.06	8.03	2.66	170	34	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
	ACCSSW0031	24/08/2021	9.6	30	10	31	126	97	71	619	<1	168	9.85	8.59	200	953	0.3	6.82	9.35	5.09	116	41	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005
Statistics																											
Maximum Concentration			34.7	52	44	31	126	306	130	626	<1	306	10.1	10.2	200	963	0.4	7	9.35	5.09	293	179	<0.00004	<0.0161	0.0822	<0.0161	<0.0161
Average Concentration *			25	41	31	15	63	183	23	486	0.5	205	7.6	7.8	85	748	0.28	2.8	8.4	1.9	233	54	0.0000018	0.0014	0.0046	0.00075	0.00075
Standard Deviation *			8.2	7.4	8.2	7.6	31	48	38	87	0	46	1.5	1.2	41	134	0.053	2.1	0.46	1.2	49	48	0.0000045	0.0034	0.019	0.0018	0.0018
% of Detects			100	100	100	100	100	100	65	100	0	100	100	100	100	100	100	100	100	100	100	100	0	5	5	0	0
% of Non-Detects			0	0	0	0	0	0	35	0	100	0	0	0	0	0	0	0	0	0	0	0	100	95	95	100	100

* A Non Detect Multiplier of 0.5 has been applied.

			Perfluorocarbons																								
			Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	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-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 PFHxS and PFOS
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0002	0.0002	0.0002
PFAS NEMP 2020 Table 1 Health Drinking Water									0.56																			0.07
PFAS NEMP 2020 Table 1 Health Recreational Water									5.6																			2
PFAS NEMP 2020 Table 5 Freshwater 99%			0.00023						19																			
Site ID	**Field ID**	**Date**																										
Mulla Mulla WWTP	ACCSSW0001	24/08/2021	<0.0002	<0.0005	<0.0020	0.0200	0.0094	0.0005	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.001	<0.001	<0.001	0.0317	0.0317	<0.0002
Western, Central and Eastern Infiltration Ponds	ACCSSW0003	19/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSW0004	19/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSW0005	19/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSW0006	20/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSW0009	20/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSW0010	20/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSW0011	20/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	ACCSSW0012	20/08/2021	<0.0002	<0.0005	<0.0020	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0007	<0.0002	<0.0002
Packsaddle WWTP	ACCSSW0016	20/08/2021	<0.0002	<0.0005	<0.0020	0.0295	0.0198	0.0136	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.004	<0.001	<0.001	0.0693	0.0693	<0.0002
	ACCSSW0017	20/08/2021	<0.0002	<0.0005	<0.0020	0.0092	0.0092	0.0102	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.008	<0.001	<0.001	0.0379	0.0379	<0.0002
	ACCSSW0018	19/08/2021	<0.0016	<0.0016	<0.0020	0.190	0.477	0.185	0.131	0.0371	0.0022	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	1.04	0.996	<0.0016
Heavy vehicle workshop Evaporation Ponds	ACCSSW0019	22/08/2021	<0.0002	<0.0005	0.131	0.373	7.50	0.0880	0.0036	0.0008	0.0010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.002	6.01	0.011	0.002	14.1	14.1	<0.0002
	ACCSSW0020	22/08/2021	<0.0002	<0.0005	0.130	0.334	6.38	0.0877	0.0037	0.0018	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.002	1.34	0.010	0.002	8.29	8.28	<0.0002
New and old washdown bays and evaporation ponds	ACCSSW0021	22/08/2021	<0.0016	<0.0016	0.0115	0.0339	0.104	0.0026	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	2.01	0.005	<0.002	2.17	2.17	<0.0016
	ACCSSW0022	22/08/2021	<0.0016	<0.0016	0.0261	0.0827	0.160	0.0072	0.0018	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	2.71	0.008	<0.002	3.00	3.00	<0.0016
Bioremediation Farm	ACCSSW0023	20/08/2021	0.0726	<0.0161	0.679	2.62	7.50	2.13	0.440	0.0564	0.0258	<0.0161	<0.0161	<0.0161	<0.0403	<0.0161	<0.040	<0.040	<0.040	<0.0161	<0.0161	<0.016	338	1.31	0.026	353	353	0.0726
Mulla Mulla WWTP	ACCSSW0030	24/08/2021	<0.0002	<0.0005	<0.0020	0.0188	0.0126	0.0006	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.003	<0.001	<0.001	0.0358	0.0358	<0.0002
	ACCSSW0031	24/08/2021	<0.0002	<0.0005	<0.0020	0.0340	0.0284	0.0023	0.0051	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.002	<0.001	<0.001	0.0718	0.0718	<0.0002
Statistics																												
Maximum Concentration			0.0726	<0.0161	0.679	2.62	7.5	2.13	0.44	0.0564	0.0258	<0.0161	<0.0161	<0.0161	<0.0403	<0.0161	<0.04	<0.04	<0.04	<0.0161	<0.0161	<0.016	338	1.31	0.026	353	353	0.0726
Average Concentration *			0.004	0.00075	0.052	0.2	1.2	0.13	0.031	0.0053	0.0019	0.00075	0.00075	0.00075	0.0016	0.00075	0.0018	0.0018	0.0018	0.00075	0.00075	0.0011	18	0.071	0.0021	20	20	0.004
Standard Deviation *			0.017	0.0018	0.16	0.6	2.7	0.49	0.1	0.015	0.0058	0.0018	0.0018	0.0018	0.0045	0.0018	0.0045	0.0045	0.0045	0.0018	0.0018	0.0017	77	0.3	0.0058	81	81	0.017
% of Detects			5	0	26	58	58	58	53	26	21	0	0	0	0	0	0	0	0	0	0	11	53	26	16	63	58	5
% of Non-Detects			95	100	74	42	42	42	47	74	79	100	100	100	100	100	100	100	100	100	100	89	47	74	84	37	42	95

* A Non Detect Multiplier of 0.5 has been applied.

		NA		Metals	Inorganics											Organic
		Sum of WA DWER PFAS (n=10)*	Sum of WA DWER PFAS (n=10)*	Iron	Exchangeable Calcium	Exchangeable Magnesium	Exchangeable Potassium	Exchangeable Sodium	Exchangeable Sodium Percent	Moisture Content	DENSITY	Electrical conductivity *(lab)	pH (Final)	pH (CaCl2)	pH (Lab)	Organic Matter %
		UG/L	mg/kg	mg/kg	meq/100g	meq/100g	meq/100g	meq/100g	%	%	g/cm3	uS/cm	pH Unit	pH Units	pH_Units	%w/w
EQL		0.0002		50	0.1	0.1	0.1	0.1	0.1	0.1	0.01	1	0.1	0.1	0.1	0.5
Site ID	**Date**															
ACCSSD0002	**19/08/2021**	<0.0002	<0.0002							16.7			7.7			
ACCSSD0003	**19/08/2021**	<0.0002	<0.0002							24.2			7.6			
ACCSSD0004	**19/08/2021**	<0.0002	<0.0002							11.5			8.6			
ACCSSD0005	**20/08/2021**	<0.0002	<0.0002							21.4			8.8			
ACCSSD0006	**20/08/2021**	0.0009	<0.0002							1.1			7.9			
ACCSSD0007	**20/08/2021**	0.0013	<0.0002							1.8			7.8			
ACCSSD0008	**20/08/2021**	<0.0002	<0.0002							18.2			8.6			
ACCSSD0009	**20/08/2021**	<0.0002	<0.0002							23.1			8.5			
ACCSSD0010	**20/08/2021**	<0.0002	<0.0002							23.6			8.7			
ACCSSD0011	**20/08/2021**	<0.0002	<0.0002							23.8			8.9			
ACCSSD0012	**20/08/2021**	0.0011	<0.0002							4.7			8.6			
ACCSSD0013	**20/08/2021**	0.0038	<0.0002							1.5			8.7			
ACCSSD0014	**20/08/2021**	0.0018	<0.0002							0.8			8.0			
ACCSSD0015	**20/08/2021**	0.0014	<0.0002							26.3			8.0			
ACCSSD0016	**20/08/2021**	0.0056	<0.0002							19.3			7.6			
ACCSSD0017	**20/08/2021**	0.0289	0.0011							44.7			8.8			
ACCSSD0021	**22/08/2021**	23.1	0.085							30.6			5.3			
ACCSSD0022	**22/08/2021**	2.99	0.0746							38.5			6.5			
ACCSSD0023	**22/08/2021**	0.0498	0.0008							22.9			6.6			
ACCSSD0024	**22/08/2021**	0.354	0.0074							38.6			6.7			
ACCSSD0025	**20/08/2021**	2.43	0.106							13.3			8.0			
ACCSSS0001	**20/08/2021**	0.408	0.0100							0.6			7.6			
ACCSSS0002	**20/08/2021**	0.0496	0.0010							0.6			8.5			
ACCSSS0003	**20/08/2021**	0.213	0.0029	171,000	4.3	0.7	0.3	<0.1		2.1	3.26	683	7.7	7.5	8.0	0.6
ACCSSS0004	**20/08/2021**	0.0608	0.0022							2.8			7.7			
ACCSSS0005	**20/08/2021**	0.0967	0.0013							0.2			7.5			
ACCSSS0006	**20/08/2021**	0.0076	<0.0002							19.7			7.7			
ACCSSS0007	**20/08/2021**	0.0153	<0.0002							4.5			7.6			
ACCSSS0008	**20/08/2021**	0.0065	<0.0002							0.9			7.4			
ACCSSS0009	**20/08/2021**	0.0018	<0.0002							0.2			7.6			
ACCSSS0010	**20/08/2021**	0.0157	<0.0002							1.1			8.8			
ACCSSS0011	**20/08/2021**	0.0132	<0.0002							0.4			8.4			
ACCSSS0012	**20/08/2021**	0.491	0.0154							1.9			8.6			
ACCSSS0013	**20/08/2021**	0.130	0.0041							0.2			8.2			
ACCSSS0014	**20/08/2021**	0.492	0.0125	114,000	16.2	0.6	0.4	<0.1	0.4	1.4	2.97	165	8.6	7.7	8.4	1.4
ACCSSS0015	**20/08/2021**	16.9	0.331							1.1			8.6			
ACCSSS0016	**20/08/2021**	0.594	0.0111							0.7			9.0			
ACCSSS0017	**23/08/2021**	<0.0002	<0.0002							12.6			7.5			
ACCSSS0018	**23/08/2021**	0.0069	<0.0002							7.3			7.7			
ACCSSS0019	**23/08/2021**	0.0018	<0.0002							10			6.8			
ACCSSS0020	**23/08/2021**	0.0017	<0.0002							12.7			6.5			
ACCSSS0021	**23/08/2021**	0.0025	<0.0002							11.5			6.8			
ACCSSS0022	**23/08/2021**	0.0021	<0.0002							0.2			5.8			
ACCSSS0023	**23/08/2021**	0.003	<0.0002							9.5			7.5			
ACCSSS0024	**23/08/2021**	0.0008	<0.0002							12.1			7.6			
ACCSSS0025	**23/08/2021**	0.0007	<0.0002							9.9			7			
ACCSSS0026	**23/08/2021**	0.0008	<0.0002							15.5			6			
ACCSSS0027	**23/08/2021**	0.0004	<0.0002							12			6.5			
ACCSSS0028	**23/08/2021**	0.0006	<0.0002	150,000	4.9	3.2	0.9	0.6	6.8	13.6	3.07	65	6.8	7.5	8.8	<0.5
ACCSSS0029	**23/08/2021**	0.0039	<0.0002							8.9			7.3			
ACCSSS0030	**23/08/2021**	0.0018	<0.0002							12			6			
ACCSSS0031	**23/08/2021**	0.0107	<0.0002							9.8			7.4			
ACCSSS0032	**23/08/2021**	<0.0002	<0.0002							12.7			6.7			
ACCSSS0033	**23/08/2021**	0.0004	<0.0002							14.2			7.7			
ACCSSS0034	**23/08/2021**	0.081	0.0012	155,000	11.2	3.6	0.8	0.6		2.6	3.29	3,170	9.4	8.9	9.4	1.2
ACCSSS0035	**23/08/2021**	<0.0002	<0.0002							11			8.2			
ACCSSS0036	**23/08/2021**	0.0007	<0.0002							0.3			8.1			
ACCSSS0037	**23/08/2021**	0.0157	<0.0002	186,000	3.6	1	0.9	0.3		1.5	3.06	577	7.2	6.6	7.1	<0.5
ACCSSS0038	**23/08/2021**	0.0023	<0.0002							0.8			8.2			
ACCSSS0039	**23/08/2021**	0.0016	<0.0002							0.8			7.7			
ACCSSS0040	**21/08/2021**	0.0039	<0.0002							1.7			7.8			
ACCSSS0041	**21/08/2021**	0.0035	<0.0002							1.8			7.4			
ACCSSS0042	**21/08/2021**	0.0010	<0.0002							2.9			7.3			
ACCSSS0043	**21/08/2021**	0.0053	<0.0002							1.6			7.2			
ACCSSS0048	**21/08/2021**	1.13	0.0294							0.4			6.7			
ACCSSS0049	**21/08/2021**	0.470	0.0094							0.2			7.0			
ACCSSS0050	**21/08/2021**	0.560	0.0190							0.5			6.9			
ACCSSS0051	**21/08/2021**	0.411	0.0088							0.4			7.0			
ACCSSS0052	**21/08/2021**	1.34	0.0293							1.3			7.0			
ACCSSS0053	**21/08/2021**	1.24	0.0445							0.6			7.5			
ACCSSS0054	**21/08/2021**	0.527	0.0106							1.0			7.3			
ACCSSS0055	**21/08/2021**	1.80	0.0541							1.0			8.8			
ACCSSS0056	**21/08/2021**	1.08	0.0221							1.0			7.8			
ACCSSS0057	**21/08/2021**	0.0040	<0.0002							3.5			9.0			
ACCSSS0058	**21/08/2021**	0.0097	<0.0002							1.6			8.9			
ACCSSS0059	**22/08/2021**	0.142	0.0049							8.6			9.4			
ACCSSS0060	**22/08/2021**	24.6	0.554							11.4			9.8			
ACCSSS0061	**22/08/2021**	0.21	0.0113							12.9			9.6			
ACCSSS0062	**22/08/2021**	0.368	0.0137							11			9.5			
ACCSSS0063	**22/08/2021**	3.46	0.118							1.6			8			
ACCSSS0064	**22/08/2021**	3.81	0.16							0.5			6			
ACCSSS0065	**22/08/2021**	4.9	0.166							0.7			6.3			
ACCSSS0066	**22/08/2021**	4.55	0.0787							0.6			8.3			
ACCSSS0067	**21/08/2021**	103	0.246							0.9			8.1			
ACCSSS0068	**21/08/2021**	7.76	0.224							1.0			8.0			
ACCSSS0069	**21/08/2021**	7.89	0.236	91,900	3.2	1.3	0.2	0.3		2.6	3.31	391	8.5	8.5	9.2	2.8
ACCSSS0070	**21/08/2021**	51.0	1.07							1.2			8.1			
ACCSSS0071	**21/08/2021**	3.89	0.0766							3.1			7.8			
ACCSSS0072	**21/08/2021**	5.93	0.174							3.0			7.8			
ACCSSS0073	**21/08/2021**	9.33	0.258							1.0			8.5			
ACCSSS0074	**21/08/2021**	15.6	0.459							3.4			8.4			
ACCSSS0075	**21/08/2021**	5.52	0.172							0.9			7.9			
ACCSSS0076	**21/08/2021**	2.90	0.138							1.8			8.5			
ACCSSS0077	**21/08/2021**	0.555	0.0294							0.7			8.4			
ACCSSS0078	**21/08/2021**	7.12	0.191							1.4			8.0			
ACCSSS0079	**21/08/2021**	7.86	0.217							1.3			8.4			
ACCSSS0080	**21/08/2021**	4.21	0.106	89,300	3.5	1.2	0.3	0.4		3.2	3.49	674	8.0	8.4	8.9	0.8
ACCSSS0081	**21/08/2021**	1.69	0.0514							0.7			8.0			
ACCSSS0082	**21/08/2021**	13.9	0.372							0.7			8.6			
ACCSSS0083	**22/08/2021**	2.64	0.0483							<0.1			6			
ACCSSS0084	**22/08/2021**	0.325	0.0041							38.8			6.4			
ACCSSS0085	**22/08/2021**	0.357	0.0039							2.5			6.4			
ACCSSS0086	**22/08/2021**	0.108	0.0027							15.7			6.2			
ACCSSS0099	**22/08/2021**	0.0086	<0.0002							1			6			
ACCSSS0100	**22/08/2021**	0.0208	<0.0002							0.2			5.1			
ACCSSS0101	**22/08/2021**	0.0832	0.002							4.4			5.3			
ACCSSS0102	**22/08/2021**	0.0235	<0.0002							1.4			5.5			
ACCSSS0111	**22/08/2021**	0.0012	<0.0002							2.1			7.2			
ACCSSS0112	**22/08/2021**	<0.0002	<0.0002							9.7			6.5			
ACCSSS0113	**22/08/2021**	0.0025	<0.0002							7.4			6.1			
ACCSSS0114	**22/08/2021**	0.0018	<0.0002	170,000	4.7	0.8	0.8	<0.1		2.4	3.04	2,440	6.4	6.2	6.3	0.8
ACCSSS0115	**22/08/2021**	0.242	0.0113							20.1			6.7			
ACCSSS0116	**22/08/2021**	0.0899	0.0019							0.1			5.9			
ACCSSS0117	**22/08/2021**	0.0253	<0.0002							0.9			5.4			
ACCSSS0118	**22/08/2021**	0.0494	0.0002	147,000	3.9	1.4	1	0.2	3.4	0.5	3.7	267	7.1	7.7	8.3	<0.5
ACCSSS0119	**23/08/2021**	0.994	0.0093							7.5			6			
ACCSSS0120	**23/08/2021**	0.0072	<0.0002							16.6			5			
ACCSSS0121	**23/08/2021**	0.0079	<0.0002							<0.1			6			
ACCSSS0122	**23/08/2021**	0.047	0.0003							0.3			7.1			

Statistics

Maximum Concentration	**103**	**1.07**	**186,000**	**16.2**	**3.6**	**1**	**0.6**	**6.8**	**44.7**	**3.7**	**3,170**	**9.8**	**8.9**	**9.4**	**2.8**
Average Concentration *	**3**	**0.051**	**141,578**	**6.2**	**1.5**	**0.62**	**0.28**	**3.5**	**7.3**	**3.2**	**937**	**7.5**	**7.7**	**8.3**	**0.93**
Standard Deviation *	**11**	**0.13**	**35,158**	**4.5**	**1.1**	**0.32**	**0.22**	**3.2**	**9.6**	**0.24**	**1,096**	**1.1**	**0.87**	**1**	**0.82**
% of Detects	**90**	**50**	**100**	**100**	**100**	**100**	**67**	**100**	**98**	**100**	**100**	**100**	**100**	**100**	**67**
% of Non-Detects	**10**	**50**	**0**	**0**	**0**	**0**	**33**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**33**

* A Non Detect Multiplier of 0.5 has been applied.

APPENDIX

C

SITE INFORMATION AND ENVIRONMENTAL SETTING

Cardno

now

Stantec

Site Information and Environmental Setting

Site Information

Site information details are provided in Table C1.

Table C-1 Sample Information Details

Detail	Description
Site Coordinates (As determined by Cardno)	North-East – 710,386 E, 7,469,219 N North-West – 683,836.354 E, 7,469,163 N South-East – 710,498 E, 7,458,476 N South-West – 683,836.354 E, 7,458,532 N (Map Grid of Australia (MGA), Geocentric Datum of Australia (GDA) 94, Zone 52)
Certificate of Title	Lot 1563 on Plan 067603
Current Owner	The mine tenure is Crown Land, and is leased to BHP Billiton Iron Ore Pty Ltd
Local Government Authority	Shire of East Pilbara
Planning/Zone/Land Use	The overall area is zoned as Rural (Shire of East Pilbara). Information last updated 2018.

Site Licence

The Site operates under licence L7851/2002/6 issued by the DWER within Mining Tenement ML281SA and in accordance with Ministerial Statement MS491. The Site is a prescribed premise, with associated categories displayed in Table C-2.

Table C-2 Prescribed Licence Descriptions

Prescribed Premises Category Description	Assessed Production Capacity
Category 5: Processing or beneficiation of metallic or non-metallic ore	71,000,000 tonnes per Annual Period
Category 6: Mine dewatering	34,931,000 tonnes per Annual Period
Category 12: Screening, etc. of material	2,000,000 tonnes per Annual Period
Category 52: Electric power generation	20 MW
Category 54: Sewage facility	1,110 m^3 per day
Category 63: Class I inert landfill site	25,000 tonnes per Annual Period
Category 73: Bulk storage of chemicals etc.	10,000 m^3 in aggregate
Category 85B: Water desalinisation plant	0.9125 gigalitres per Annual Period
Category 89: Putrescible landfill site	5,000 tonnes per Annual Period

Operation Overview

BHP WAIO includes open pit mining techniques, ore processing methods and supporting mine infrastructure. The main components of the mine are as follows:

- Mining of ore using conventional, progressive, open pit mining methods;
- Mine dewatering in order to access ore located below the water table;
- Reverse circulation and diamond exploration drilling;
- Disposal of overburden from the open pits into adjacent ex-pit overburden storage areas and as infill in mined out sections of the pits;
- Crushing and screening of ore at two ore handling plants (OHP1 and OHP2) and up to two additional ore handling plants at Southern Flank;
- Lump and fine product transfer via conveyors into stockpiles located in stockyard areas;

- Use of rail load-out facilities and a railway spur to MAC;
- Groundwater abstraction using a network of bores and in-pit sumps to meet the water demand for the Site;
- Stormwater management transfer and storage facilities (currently the eastern and western sediment control ponds);
- Water disposal infrastructure;
- Domestic WWTPs;
- Waste management facilities (including inert and putrescible landfills);
- Camps and associated infrastructure including Packsaddle Village and Mulla Mulla Village;
- Coondewanna Airport;
- Construction and operation of internal access roads, service roads and haul roads; and
- Use of workshops, consumable storage areas, offices, and other service facilities (such as the bulk ammonium nitrate and explosive storage facility) and infrastructure required (including fuel storage areas, refuelling stations and washdown facilities) for the operation of the mine.

Environmental Setting

A review of the following documents was undertaken and utilised to gain an understanding of the environmental setting of the Site and the surrounding area:

- Central Pilbara Conceptual Model (BHP, 2019);
- Mining Area C Detailed Hydrogeological Review (2014); and
- Ecohydrological Conceptualisation of the Central Pilbara Region (RPS, 2015).

Information obtained from these reports and other publicly available information has been summarised, where relevant, below.

Climate

The Pilbara region is characterised by an arid-tropical climate influenced by tropical maritime and tropical continental air masses, receiving rainfall predominantly during December to February. Cyclones also tend to occur during these months, bringing heavy rain and strong winds.

Temperature

The Pilbara region has an extreme temperature range, rising up to 50 degrees Celsius (°C) during the wet season, and dropping to approximately 0°C during the dry season (Bureau of Meteorology [BOM]). The nearest open BOM climatic station to the Site is that at Newman Airport (Newman Aero – Site Number 007176). Mean monthly temperatures at Newman Aero since 1996 range from 39.2°C in December to 23.1°C in June (BOM, 2021). High temperatures and humidity seldom occur together, giving the Pilbara its very dry climate.

Rainfall

The Pilbara region has highly variable rainfall, which is dominated by the occurrence of tropical cyclones mainly from January to March. Moist tropical low-pressure systems that develop in the north bring substantial rainfall over wide areas. With the exception of these large events, rainfall is highly variable, and localised, and dominated by short duration high intensity thunderstorm activity.

Between May and October, low pressure cold fronts move in an easterly direction across South Western Australia and can reach the Pilbara region producing light rains.

The Newman Aero BOM station (Station No 007176) has recorded long term rainfall data for the inland Pilbara region where the annual average rainfall since 1971 is 325.1 mm (BOM, 2021). Annual variability is high with recorded rainfall at Newman varying between 36.6 mm recorded 1996 and 619.2 mm recorded in 1999.

On average the driest period for Newman Aero is July to November, with September and October historically the driest months. On average, January and February are the wettest months as a result of the cyclone season.

The mean annual pan evaporation rate at Newman is estimated at 3,733 mm (Department of Agriculture, 1987), which exceeds the mean annual rainfall by approximately 3,400 mm. Average monthly pan evaporation rates for Newman vary between a minimum of 173 mm in June and a maximum of 466 mm in December.

As annual average potential is in excess of the average annual rainfall, there is commonly a large moisture deficit in the environment. Rainfall events below a threshold of approximately 20 mm tend to be insufficient to overcome this deficit and do not generate runoff. Consequently:

- Creek flow is ephemeral;
- Diffuse recharge to the regional groundwater system occurs at very low rates; and
- Groundwater recharge occurs preferentially during rainfall-runoff events along the major creeks and other areas of surface water concentration/inundation.

Topography

The regional topography is marked by a series of east-west trending valleys and alluvial plains bound by rolling-hills. The topography is influenced by geology and geological structure and the bounding hills tend to be low-lying and rounded where they are formed by outcrops of the Marra Mamba Iron Formation (Marra Mamba) and higher with scarp slopes where they are formed of Brockman Iron Formation. The highest peaks in the area are in excess of 1,000 m AHD (The Governor and Mt Robinson) while the valley floors range between 700 m AHD down to 550 m AHD.

Regional Drainage

MAC is located within the Upper Weeli Wolli catchment, which in turn is located within the Fortescue River Basin.

The Fortescue River Basin drains west to northwest towards the Indian Ocean and has a total catchment area of approximately 50,000 km^2. The Goodiadarrie Hills located within the Fortescue Valley and on the downstream (western) end of the Fortescue Marsh, effectively separates the Fortescue River into two river systems. The upper Fortescue River system comprises the upper portion of the Fortescue River and several large creeks including the Weeli Wolli Creek. The lower portion of the Fortescue River, downstream from the Fortescue Marsh, drains in a general north westerly direction to the coast.

Streamflow

Streamflow in the Pilbara region is directly correlated to rainfall, with most streamflow occurring during the wetter months of December through to March associated with large and more intense rainfall events. Streamflow in the smaller flow channels is typically short in duration, and ceases soon after the rainfall passes. In the larger river channels which drain the larger catchments, runoff may persist for several weeks and possibly months following major rainfall events such as those resulting from tropical cyclones.

Geology

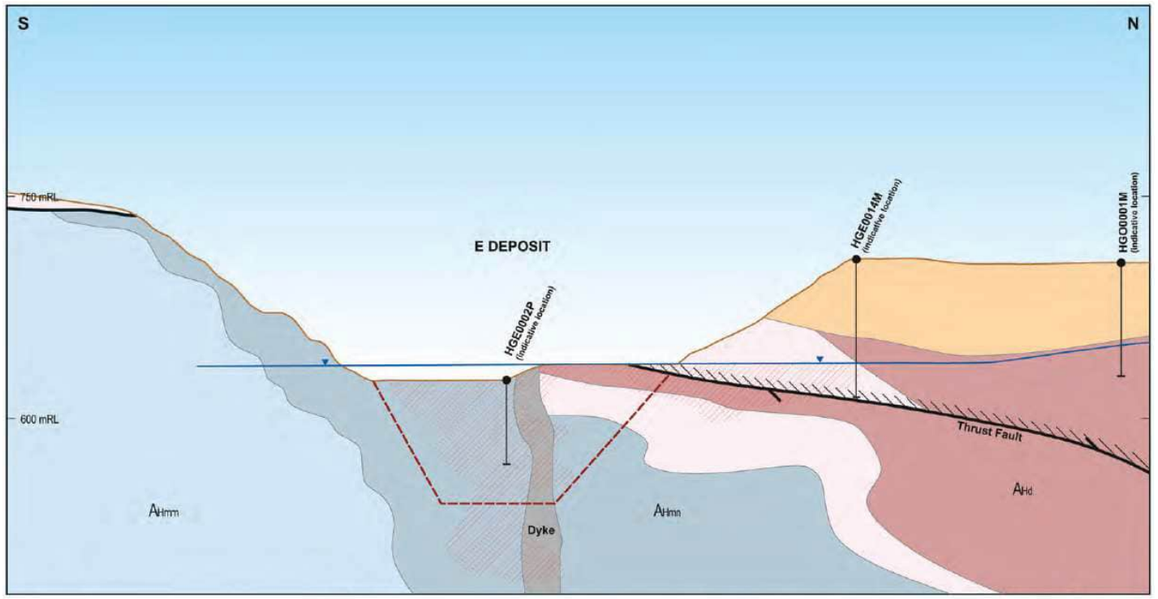
The regional geology of the area originates in the Hamersley Basin, a late Archaean to Palaeoproterozoic platformal cover sequence of weakly metamorphosed sedimentary and volcanic rocks, unconformably overlying the mid Archaean granite - greenstone terrain of the Pilbara Craton. The Hamersley Basin sequence comprises the regionally conformable Fortescue, Hamersley and Turee Creek Groups. Within the Central Pilbara area, outcrop geology is dominated by rocks of the Hamersley Group and (to a lesser extent) the uppermost Fortescue Group that underlies the Hamersley Group.

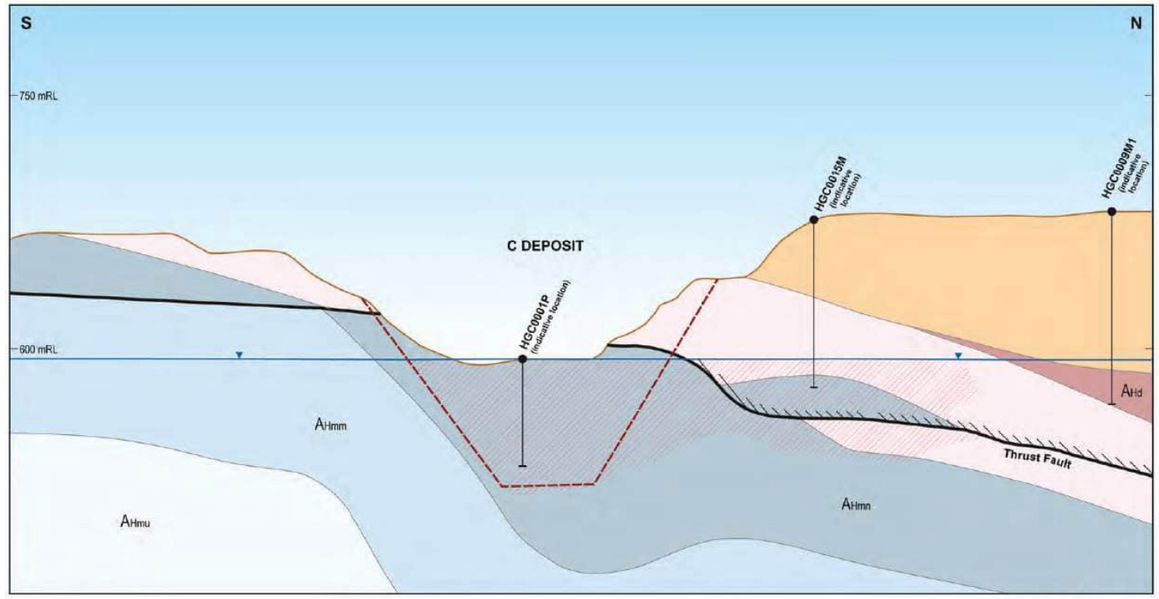
The formations of the Hamersley Group comprise a series of siliceous and carbonate-rich moderate-to deep-water sediments (i.e. chert and shale) that have been chemically altered and iron-enriched to form Banded Iron Formation (BIF) and dolomite.

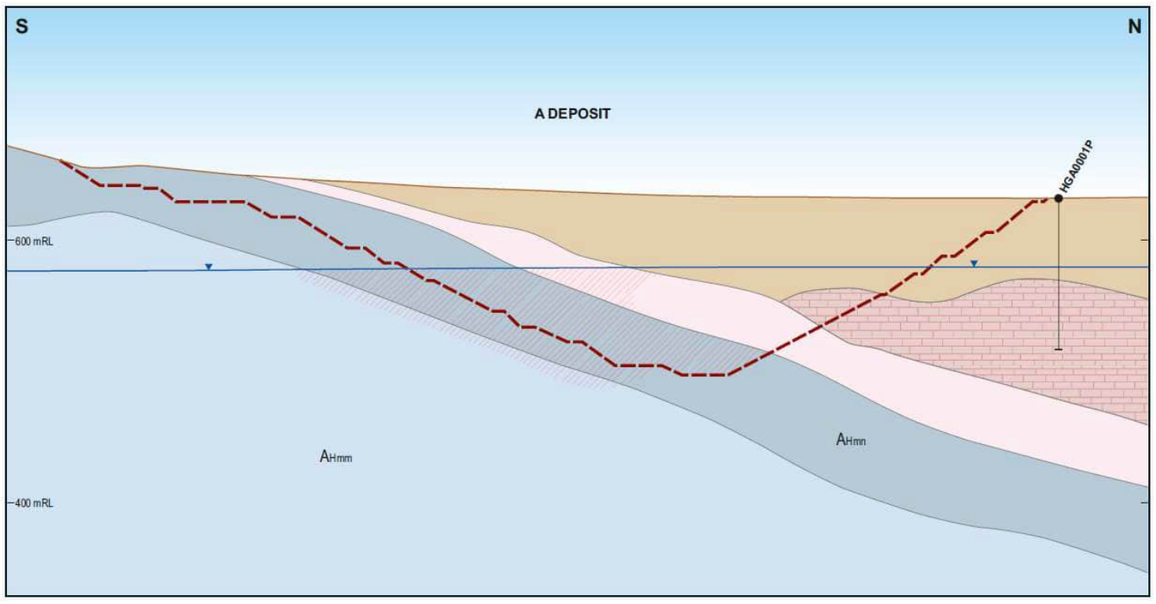
Active creek channels and floodplains are infilled with recent alluvium. This ranges from silt and clay to coarse gravel and is often poorly sorted - a characteristic of the ephemeral flow regime.

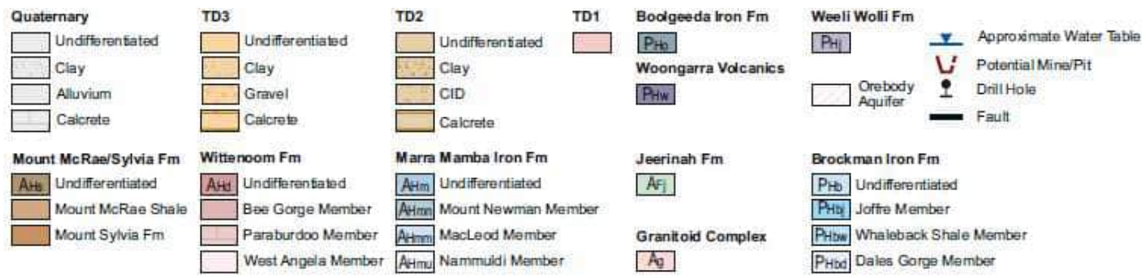
Geological cross sections of Deposits E, C and A, sourced from the Ming Area C Detailed Hydrogeological report developed by RPS (RPS, 2014), are displayed in Figure C-1

Figure C-1 Geological Cross Sections (RPS, 2014)









Hydrology

There are three identified key hydrological receptors in the catchment with relevance to surface water:

- Coondewanna Flats (the Flats) are located approximately 20 km to the west of MAC and are an internally draining alluvial plain and wetland feature which is the terminus for surface water flow from the west of the catchment. Coondewanna Flats is a flat-lying area at approximately 690 metres above sea level, with a catchment area of approximately 800km^2. The Flats support a Priority Ecological Community of woodland and forest. Significant depth to water (>20 m below ground level (BGL)) at the Flats makes it unlikely that this is a groundwater dependent receptor and vegetation communities are more likely to be dependent on the surface water regime of the Flats;
- Weeli Wolli Spring is located approximately 25 km to the east of MAC and is where Weeli Wolli Creek flows through a gorge in the Wildflower Range. The area supports an unusual combination of riparian vegetation and fauna. It is understood that RTIO currently discharge surplus mine dewatering water into Weeli Wolli Creek just upstream of the spring and just downstream of the Spring; and
- Ben's Oasis is a series of pools along the channel of Weeli Wolli Creek located approximately 50 km to the east of MAC where there is a shallow basement rock bar. These pools support riparian woodland and forest associations.

In arid and semi-arid zones, such as the Pilbara, surface runoff is typically generated when the rate of rainfall exceeds the infiltration capacity of the ground causing overland flow. Surface runoff can also be generated from soils already saturated to the surface where additional rainfall becomes overland flow.

Weeli Wolli Spring Catchment

The Site is located within the Weeli Wolli catchment up-stream from Weeli Wolli Spring. Weeli Wolli Creek is an ephemeral surface water system and Weeli Wolli Spring is a natural surface expression of groundwater flow resulting from hydrogeological features in the creek bed. The surface water catchment upstream from Weeli Wolli Spring has an approximate area of 1,450 km² and is located to the east of the Site, with dewatering discharge and aquifer recharge located to the west of the Site, up-gradient of Coondewanna Flats.

Hydrogeology

Groundwater generally flows across the catchment from west to east from the Tandanya and Mudlark mining areas through Coondewanna Flats and along the North and South Flank Valleys. Groundwater then flows to the northeast with flow concentrating on Weeli Wolli Spring (25 km distance to the east of MAC). Weeli Wolli Spring marks the surface and groundwater outflow. The spring occurs where Weeli Wolli Creek passes through a gorge eroded through the Wildflower Range. Downstream of the gorge, the creek flows through a narrow channel past the confluence with Marillana Creek and ultimately into the Fortescue River Valley.

The first groundwater level observations (held by BHP) are from the early 1980's, largely around MAC's A and E Deposit where the first pumping for water supply occurred. Monitoring frequency and spatial coverage was otherwise limited until the late 1990's when interest in mining the area started to grow and has increased significantly since 2006 when mining below water table (BWT) commenced at Hope Downs (RTIO) and then in 2010 with the first BWT mining at MAC.

The orebody aquifer occurs in elongate pods associated with E D, C and A Deposits. The distribution of the orebody aquifer is shown in Figure C-2 (RPS, 2014). The aquifer is not continuous along strike being limited by zones of intervening unmineralised BIF and by low permeability dykes.

Depth to groundwater is significant over most of the catchment. Rough ranges of pre-development depth to groundwater in the various areas are:

- North Flank Valley: 80 to 60 m BGL;
- South Flank Valley: 60 to 40 m BGL;
- Coondewanna Flats: 30 to 20 m BGL:
- Hope Downs Valley: 40 to 20 m BGL; and
- Weeli Wolli Spring aquifer system: 15 to 0 m BGL.

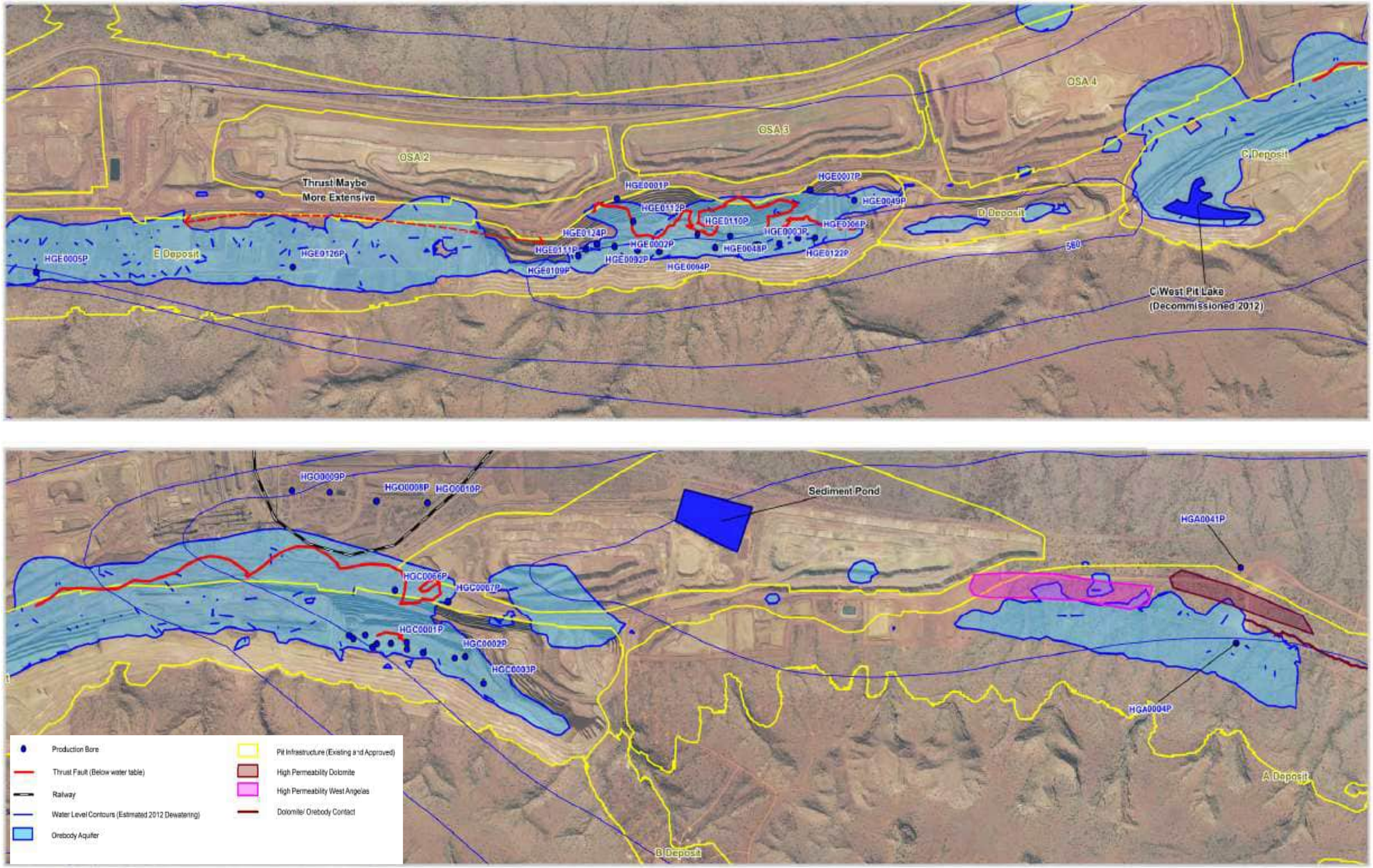
Significant depth to groundwater combined with the prevailing rainfall and evaporation rates and patterns suggests that rainfall recharge is minimal in most areas. However, time variant groundwater heads in both the regional and to a lesser extent the orebody aquifers, show significant increases following major rainfall events. The main locations where this is observed are Coondewanna Flats and Hope Downs and Weeli Wolli aquifer systems, where head increases of several metres have been observed.

At Coondewanna Flats, the monitoring record commences after the very high rainfall associated with the 1999/2000 wet season, but between 2005 and 2017 records show two major responses to rainfall, the first in the 2005/2006 wet season and the second in the 2011/2012 wet season. Similar behaviour is apparent in the dolomite through the North Flank Valley and Hope Downs aquifer system and to a lesser magnitude in the orebody aquifers.

By contrast, groundwater levels in the area of the Weeli Wolli Spring aquifer system responded to rainfall in most wet seasons, suggesting that recharge here is much more frequent and occurs at a much lower rainfall threshold.

Groundwater in the vicinity of the Site is generally fresh with total dissolved solids (TDS) ranging between 200 mg/L and 1,000 mg/L. In the area of Weeli Wolli Spring, there is a tendency for higher TDS values (up to 1,000 mg/L) to be associated with areas of potential evapotranspiration.

Figure C-2 MAC Orebody Aquifer (RPS, 2014)



Water Use

Potable water is currently abstracted from bores HNPIAC0001P and HNPIAC0002P located to the east of Great Northern Highway, and outside of the MAC mining operations.

Historically, there was only small amounts of groundwater abstraction from windmill-equipped pastoral bores and wells through the area. These bores typically targeted shallow aquifers. Groundwater abstraction to support mining started in 2001 when BHP Billiton Iron Ore began constructing MAC. Early abstraction was for construction purposes and was less than 2,000 kL/d on average. This abstraction occurred from bores drilled into the regional dolomite/Tertiary detrital aquifer. Subsequently, abstraction increased to an average of approximately 5,000 kL/d when mining and ore-processing at C Deposit started.

In 2006, mining commenced at E Deposit and abstraction from the regional aquifer adjacent to E Deposit started, progressively increasing to approximately 4,000 kL/d by 2009. During the FY20/21, a total of 18,649,626 kL was abstracted from deposits A, C and E, equating to approximately 51,095 kL/day.

Groundwater Discharge

During the initial mine operation surplus dewatering water was returned to the groundwater system by infiltration from on-site water storage basins (an in-pit lake and ex-pit pond).

From 2012, excess water has also been reinjected directly back into the aquifer through a Managed Aquifer Recharge (MAR), with excess water now also discharged via the Infiltration Ponds.

The discharge in aggregate with production capacity consists of up to:

- 10,950,000 k/l per Annual Period (discharged to the Western Sediment Basin);
- 8,760,000 k/l per Annual Period (discharged to the Central Sediment Basin);
- 10,950,000 k/l per Annual Period (discharged to the Packsaddle Infiltration Ponds); and
- 12,775,000 k/l per Annual Period (reinjection – Juna Downs).

At the time of the investigation excess water was being directed to the Packsaddle infiltration ponds and the Juna Downs MAR.

Flora and Vegetation

The Site is located within the Hamersley Interim Biogeographical Regionalisation of Australia (IBRA) Subregion in the Pilbara IBRA Bioregion (BHP, 2016).

The Hamersley Sub-region forms the southern section of the Pilbara Craton, and is dominated by Mulga low woodland over bunch grasses on fine textured soils in valley floors, with Eucalyptus leucophloia over Triodia brizoides on skeletal soils of the ranges.

No Declared Rare Flora (DRF) occur within the Site boundary. Ten flora species listed as priority flora by the Department of Parks and Wildlife (DPaW) occur within the Site boundary.

- Acacia bromilowiana (Priority 4);
- Aristida jerichoensis supsp. spinulifera (Priority 3);
- Aristida lazaridis (Priority 2);
- Eremophila magnifica subsp. magnifica (Priority 4);
- Grevillea saxicola (Priority 3);
- Nicotiana umbratica (Priority 3);
- Rhagodia sp. Hamersley (M. Trudgen 17794) (Priority 3);
- Rostellularia adscendens var. latifolia (Priority 3);
- Sida sp. Barlee Range (S. van Leeuwen 1642) (Priority 3); and
- Triodia sp. Mt Ella (M.E. Trudgen 12739) (Priority 3).

Twenty-three introduced flora species have been recorded within the Site boundary. None of these taxa are listed as Declared Pests under the Biosecurity and Agriculture Management Act 2007 (BAM Act).

Terrestrial Fauna

Numerous surveys have been conducted at the Site and surrounds, during which 11 vertebrate fauna species of conservation significance have been recorded within the Site boundary. Twelve confirmed short-range endemic invertebrate fauna species have been recorded (BHP, 2016).

The following species are important for management at the Site:

- Ghost bat Macroderma gigas (listed as Vulnerable under the Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and the Wildlife Conservation Act 1950 (WC Act); and
- The short-range endemic millipede Antichiropus 'DIP'007'.

Ghost bats have been identified with the boundary of the Site. Ghost bats generally forage within 2.0 km of their roost, and utilise trees such as the snappy gum. Euclayptus leucophloia, for feeding and resting. Antichiropus 'DIP007' occurs on hill crests across the Jirrpulpar Range, where it utilises vegetation at the base of the mallee eucalypt Corymbia hamersleyana.

It is understood two of these habitats to have high value to vertebrate fauna (Gorge/Gully and Major Drainage Line), as they provide core habitat for conservation significant species. A number of roosts for the ghost bats have been recorded within the Site boundary.

APPENDIX

D

KNOWLEDGE BASE AND DOCUMENT REVIEW

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Knowledge Base and Document Review

BHP WAIO Contaminated Site Database

BHP WAIO, as part of their ongoing operational due diligence have identified potential contaminated areas/sites associated with the ongoing operation of the mine and Contaminants of Potential Concern (CoPC).

As part of the due diligence exercise, PFAS has been identified as a CoPC, which has not previously been comprehensively assessed and forms the basis for this investigation.

Information concerning areas identified by BHP WAIO as potentially associated with PFAS and/or Aqueous film forming foams (AFFF) are presented in Table D-1.

Table D-1 BHP WAIO Identified Contaminated Sites/Areas

Potential Contaminated Areas/Sites	ID	Information
Landfarm	AC-03	Two Lined ponds - Soil and liquid contamination
Inert Landfill	AC-04	The landfill is encapsulated and is considered a very low.
Area C Landfill - Putrescible	AC-05	The landfill is encapsulated and is considered a very low.
Historical Sewerage Irrigation Area	AC-06	Identified as a potential closure remediation issue.
Workshop	AC-09	Reports of AFFF discharged during annual maintenance of SME on to ground and into the washdown bay.
Heavy Vehicle Washdown Bay	AC-10	Reports of AFFF discharged during maintenance of heavy vehicle.
Heavy Vehicle Evaporation Pond	AC-11	Lined pond, minor soil hydrocarbon risk and AFFF risk if the liner is not intact.
Wastewater Treatment Plant (WWTP) - Packsaddle	AC-12	Identified as a potential PFAS risk associated with closure remediation.
BioMax Evaporation Pond - OHP	AC-13	Identified as a potential PFAS source.
Coondawanna Airport Refuelling Area	AC-16	Possible storage and use of AFFF. Airport was previously used as a fire training ground.
Packsaddle - Historical Sewerage Irrigation Area	AC-17	Identified as a potential PFAS risk associated with closure remediation.
BioMax Evaporation Ponds - Admin	AC-18	Identified as a potential PFAS risk associated with closure remediation.
BioMax Evaporation Pond - E Deposit	AC-19	Identified as a potential PFAS risk associated with closure remediation.
Firefighting Training Ground	AC-21	Current firefighting training ground, the only fire training ground ever utilised at MAC with a potential risk of AFFF.
ESO Vehicle Washdown Area	AC-22	Wash down area for the fire trucks - hoses containing fire suppressant are drained into this area, risk of AFFF.
BioMax Evaporation Pond - Central Warehouse	AC-23	Identified as a potential PFAS risk associated with closure remediation.
BioMax Evaporation Pond - Forward Store	AC-24	Identified as a potential PFAS risk associated with closure remediation.
BioMax Evaporation Pond - Heritage Building	AC-25	Identified as a potential PFAS risk associated with closure remediation.

BHP WAIO have indicated that foam suppression systems are not installed on fixed plant, including fuel storage areas.

PFAS Sampling

Analysis of PFAS in surface water, soil or sediment has not been undertaken at MAC. However, limited PFAS sampling and analysis has been undertaken on groundwater. HNPIAC0001P and HNPIAC0002P, registered as potable production bores on the BHP borehole database, have been sampled and analysed for PFAS on six occasions since January 2019. The maximum PFAS concentrations (that have established assessment criteria) recorded during the monitoring period are summarised below:

- PFOA - <0.001 µg/L;
- PFOS – 0.0007 µg/L; and
- Sum of PFHxS and PFOS - 0.0007 µg/L.

BHP WAIO Annual Aquifer Review

During the development of this report and subsequent to the development of the SAQP, Cardno were provided with an Annual Aquifer Review (ARR) for MAC and South Flank Borefields (BHP WAIO, 2021). This AAR covers the period from 1 July 2020 to 30 June 2021.

Licenced Operation

Groundwater abstraction at MAC is regulated through the Rights in water Irrigation (RiWI) Act 5C Licence to Take Water. Three licences exist for the Site; GWL110044(12), GWL178477(3) and GWL174613(1), summaries of each licence is provided below:

- GWL110044(12) allows the annual abstraction of 36,500,000 kL (100,000 kL/day) of groundwater at MAC and South Flank. This water is authorised for the following usages: dewatering or mining, dust suppression, earthworks and construction, exploration activities, mineral ore processing, camp purposes and potable water supply;
- GWL178477(3) allows the annual abstraction of 750,000 kL (2,055 kL/day) of groundwater at Juna Downs Borefield. The borefield is for potable use and was commissioned early 2018. An application was submitted in November 2019 to increase the annual entitlement to 1,500,000 kL and is pending; and
- GWL174613(1) allows the annual abstraction of 50,000 kL (137 kL/day) of groundwater at Mulla Mulla Camp Borefield. The borefield is for potable water supply and was not used during this reporting period. The abstraction bore associated with this groundwater licence is currently non-operational.

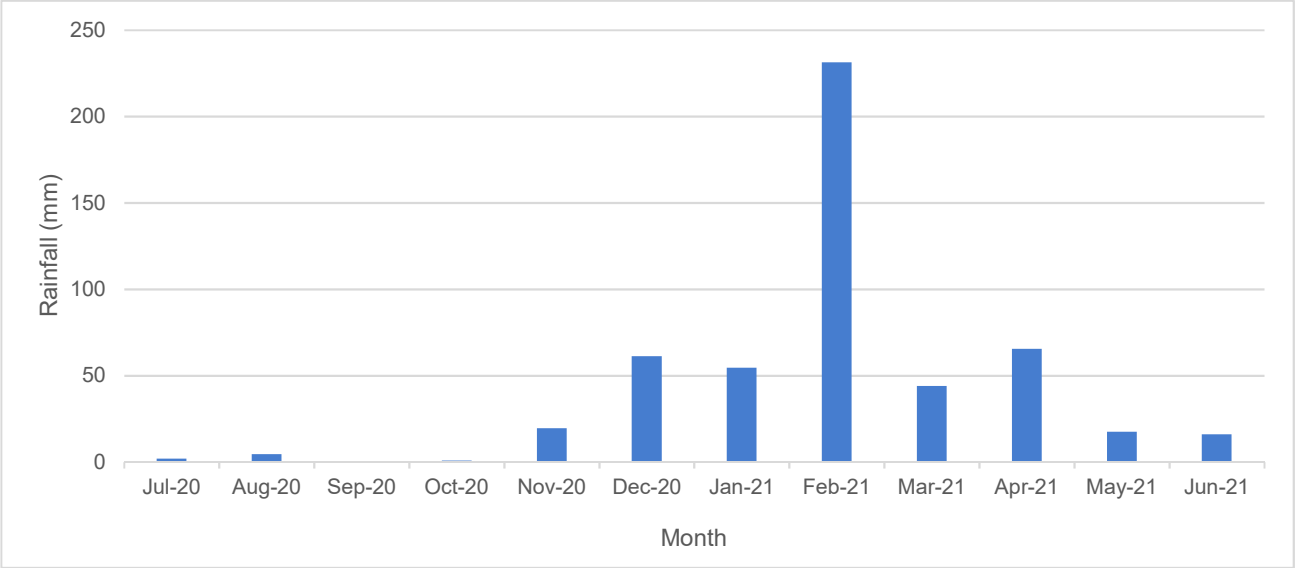
Surplus water is managed using several different schemes, which include reinjection into the Juna Downs Managed Aquifer Recharge (MAR) borefield (licenced at 7,300,000 kL/yr), and the utilisation of sediment basins (Western and Central, licenced at 10,760,000 kL/yr) and the Runaway Valley infiltration ponds (licenced at 10,950,000 kL/yr which infiltrate water back to the groundwater system (with some evaporative losses). The surplus water schemes are regulated under the EP Act Part V Environmental Licence L7851/2002/6.

An additional 5C licence, GWL166389(9), is held by BHP for operations at the nearby South Flank mine. Abstraction associated with this licence isn't directly used at the Site, although is factored into the dewatering operations and disposal.

Rainfall

Rainfall measured by BHP WAIO at the MAC weather station indicated that total rainfall in FY21 was 517.4 mm as presented Figure D-1.

Figure D-1 MAC Monthly Rainfall



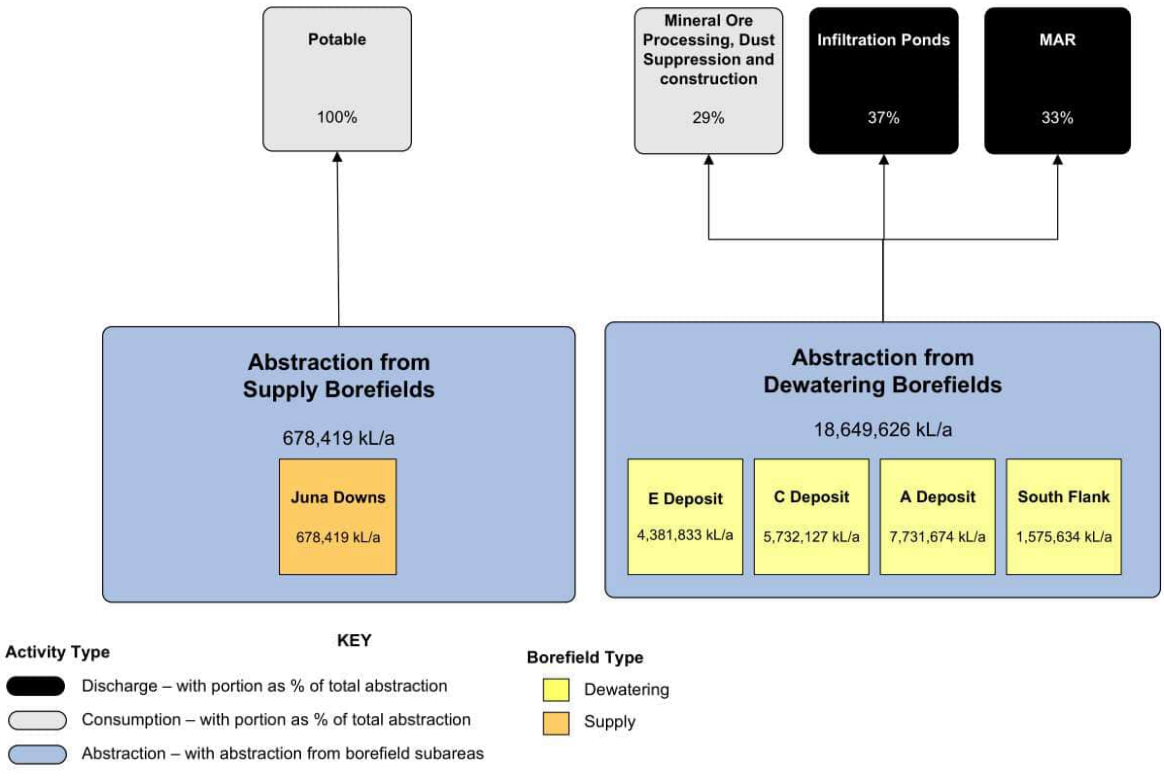
Abstraction and Water Use

During FY21, the total groundwater abstracted against the current annual water entitlement (allocation) for each licence was:

- GWL110044(12) (E, C and A deposits including South Flank Fractured Rock) - 18,649,626 kL, or 51% of the authorised allocation of 36,500,000 kL;
- GWL178477(3) Juna Downs potable abstraction – 678,419 kL or 90% of the authorised allocation of 750,000 kL;
- GWL174613(1) Mulla Mulla camp - 0.0 kL or 0% of the authorised allocation of 50,000 kL; and
- GWL166389(9) South Flank – 771,642 kL or 4% of the authorised allocation of 21,900,000 kL.

Figure D-2 displays the water balance across MAC and South Flank.

Figure D-2 MAC and South Flank Water Balance



MAC Borefields

The MAC borefield included:

- 37 operational production boreholes;
- Six operational reinjection boreholes (Juna Downs MAR); and
- ~77 associated monitoring boreholes.

BHP WAIO indicated that during the past six years preliminary work has been carried out in the South Flank area, south of the Mining Area C operations, in preparation for future mining in this new deposit. South Flank developments during FY20 included the commissioning of some new production bores. The early stages of mining at South Flank during FY20 and FY21 did not involve active dewatering.

During FY21 18 new groundwater monitoring bores and six new production bores were constructed.

The MAC borefield is separated into six individual borefields as summarised below and presented in Figure D-4, with the Juna Downs bores displayed in Figure D-3:

- Juna Downs;
- Mulla Mulla;
- Packsaddle;
- E Deposit;
- C Deposit; and
- A Deposit.

Figure D-3 Juna Downs MAR Borefield (BHP WAIO, 2021)

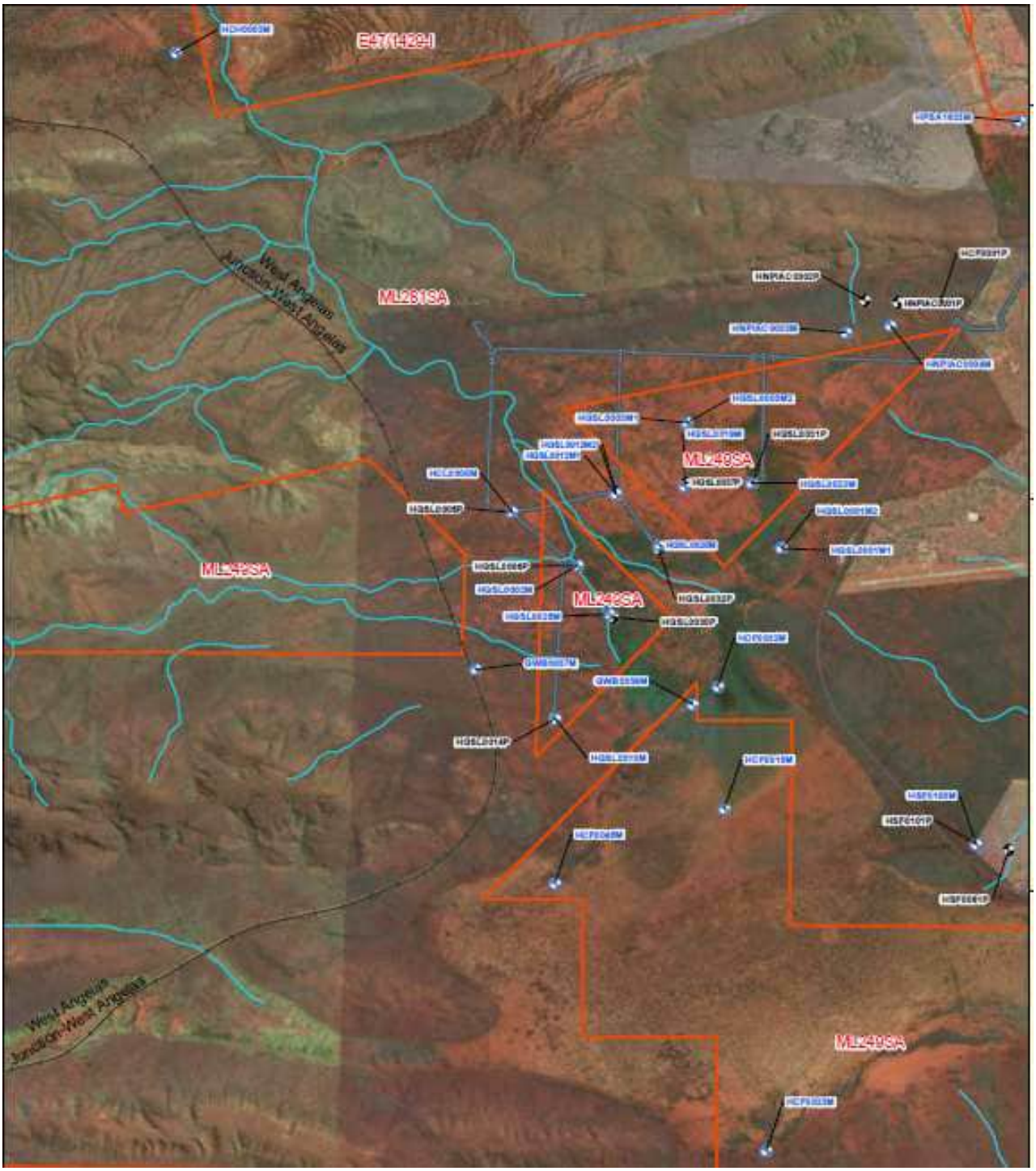
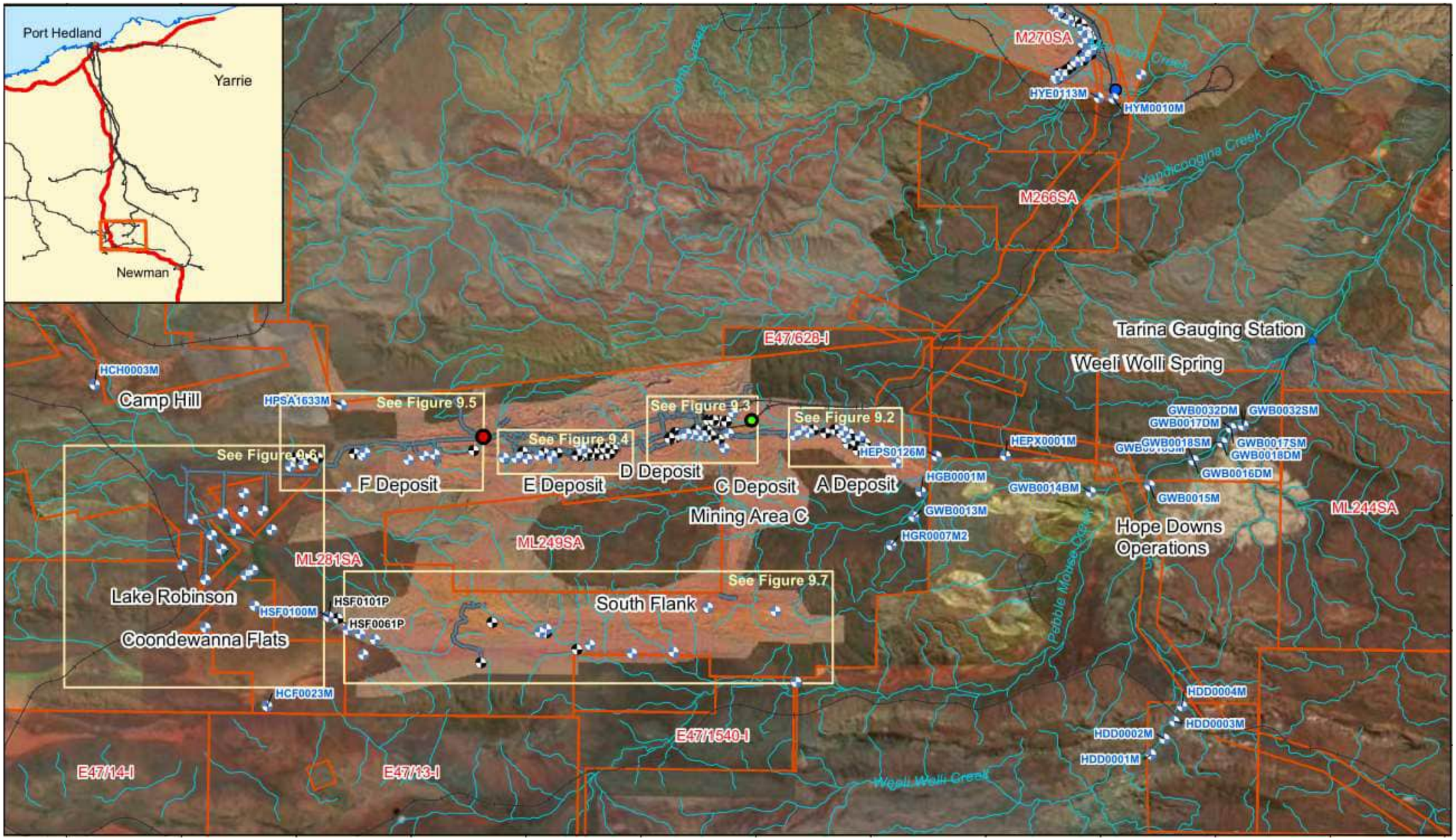


Figure D-4 MAC Borefields (BHP WAIO, 2021)



Active Production Bores

At the time of the field assessment a total of 28 production bores were operational, the details of the operational production bores including bore depth, and screen depth is presented in Table D-2. The information within the table is taken the BHP WAIO data base.

Table D-2 Operational Production Bores

Bore Name	Location	Surface Level	Hole Depth (m BGL)	Top of Screen (m BGL)	Base of Screen (m BGL)
HGA0040P	A Deposit	633.881	157	117.3	153.8
HGA0041P	A Deposit	636.715	138.3	65.1	131.6
HGA0062P	A Deposit	632.454	190	56	182
HGA0065P	A Deposit	628.844	180	58	166
HGA0070P	A Deposit	635.648	190	79	187
HGA0074P	A Deposit	642.217	202	118	202
HGA0077P	A Deposit	640.1	200	116	200
HGC0163P	C Deposit	605.432	162	50	158
HGC0165P	C Deposit	605.146	156	57	153
HGC0189P	C Deposit	630.072	172	56.5	164.5
HGC0200P	C Deposit	672.331	283	184.2	277
HGC0202P	C Deposit		No details available		
HGC0213P	C Deposit		No details available		
HGC0221P	C Deposit		No details available		
HGC0233P	C Deposit	569.199	120	38	110
HGC0243P	C Deposit	557.625	126	42	120
HGC0244P	C Deposit		No details available		
HGC0253P	C Deposit	569.147	120	84	120
HGC0265P	C Deposit	605.505	164	94	160
HGE0148P	E Deposit	718.921	212	133.4	212
HGE0190P	E Deposit	697.585	230	167.7	227.7
HGE0192P	E Deposit		No details available		
HGE0201P	E Deposit	584.277	130	40	109.5
HGE0226P	E Deposit	584.982	126	52.6	120
HGE0232P	E Deposit		No details available		
HGE0243P	E Deposit	644.357	156	78	156
HGE0246P	E Deposit	644.404	160	74	146
HGE0254P	E Deposit		No details available		

Groundwater Quality

Groundwater quality across each of the MAC borefields as presented in the AAR is summarised in the following subsections. The results indicate minor site-specific trigger value (SSTVs) exceedances of barium, boron, chromium, fluoride, lead, magnesium, manganese, molybdenum, and potassium; however, it was reported that concentrations were within the historic range. The monitoring results did not show any significant changes to water quality, when compared to historical data and groundwater quality is reflective of ambient conditions.

Juna Downs (Potable Bores)

BHP WAIO reported that field pH measurements fell within a narrow circumneutral range, with values ranging between 7.1 –7.5 for the FY21 monitoring period (falling within the historical range seen previously). Field electrical conductivity (EC) values remained consistent with previous years with reported measurements ranging between 721 – 790 µS/cm, indicating fresh conditions.

Laboratory analysis results indicated a minor exceedance of the SSTV for magnesium (with a maximum reported concentration of 40mg/L above the SSTV of 34 mg/L).

Mulla Mulla

The Mulla Mulla camp bore (HPSA0004P) has not been used as a potable supply since October 2018, and no water quality data were collected during FY21.

Packsaddle

Packsaddle has historically operated as an infiltration area and is outside the main orebody aquifer zone.

Field pH and EC measurements are taken at regional monitoring bore HPSA1633M located hydraulically upgradient from the Packsaddle infiltration ponds. Field pH measurements were slightly acidic, ranging between 5.7 to 6.7 during the FY21 monitoring period. It was reported that these values were consistent with pH values measured during previous years. Field EC values varied between 360 – 500 µS/cm over the FY21 monitoring period indicating fresh conditions.

Laboratory analysis results for Packsaddle samples show exceedances of SSTVs:

- Barium (with a maximum reported concentration of 0.081 mg/L, compared to the SSTV of 0.020 mg/L); and
- Zinc (with a maximum reported concentration of 0.100 mg/L, compared to the SSTV of 0.043 mg/L).

E Deposit

BHP WAIO reported field pH measurements ranged from near neutral to slightly alkaline with reported values between 7.1 and 8.1 during FY21 (falling within the historical range seen previously).

Field EC values remained consistent with previous years, with reported measurements ranging between 590– 760 µS/cm, indicating fresh conditions.

Laboratory analysis results for E Deposit samples show minor exceedances of SSTVs:

- Chromium (with a maximum reported concentration of 0.002 mg/L, compared to the SSTV of 0.001 mg/L)
- Magnesium (with a maximum reported concentration of 35mg/L, compared to the SSTV of 34 mg/L); and
- Molybdenum (with a maximum reported concentration of 0.004 mg/L, compared to the SSTV of 0.001 mg/L).

C Deposit

Field pH measurements for the FY21 period were reported to have ranged from near neutral to slightly alkaline, ranging between 7.1 – 8.1 (similar to the measurements reported for E Deposit). The reported range in values remained within the general range of pH measurements reported for previous years.

Field EC measurements ranged between 580 - 760 µS/cm during the reporting period, it was reported that these values were comparable to previous monitoring periods and indicated fresh conditions.

Laboratory analysis results for C Deposit samples show minor exceedances of SSTVs:

- Barium (with a maximum reported concentration of 0.022 mg/L, compared to the SSTV of 0.020 mg/L);
- Boron (with a maximum reported concentration of 0.48mg/L, compared to the SSTV of 0.37 mg/L);
- Fluoride (with a maximum reported concentration of 0.6 mg/L, compared to the SSTV of 0.4 mg/L); and
- Lead (with a maximum reported concentration of 0.008 mg/L, compared to the SSTV of 0.003 mg/L).

A Deposit

The field pH measurements were reported to be within the historical range with values of 7.0 – 7.6 recorded, indicating near neutral results. Field EC values remain consistent with previous years, with reported measurements ranging between 600 – 790 µS/cm, indicating fresh conditions.

Laboratory analysis results for A Deposit samples showed one minor exceedance of the SSTV for magnesium (with a maximum reported concentration of 35mg/L compared to the SSTV of 34 mg/L).

APPENDIX

E

SITE INSPECTION BHP WAIO REGISTERED SITES

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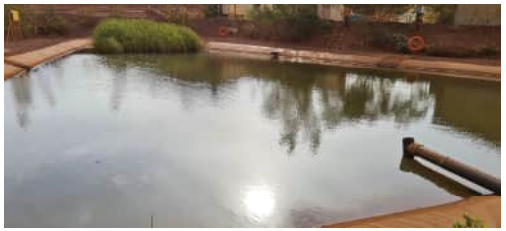
Item	Description	Photographs
Landfarm		
BHP WAIO Contaminated Site ID	AC-03	
Area	12,000 m^2	
Surface coverings	Unsealed, with sparse vegetation cover around the perimeter of the area	
Nearby water bodies	There are no natural surface water bodies in the vicinity of the area	
Surface soil and Stability	Surface soils in unsealed areas are typically gravelly sand, soils appear mostly stable	
Drainage Channels	No drainage channels were identified during the inspection	
Evidence of previous site contamination investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	Water and sediment from washdown bays and OWS systems are transported to the wet and dry bioremediation cells	
Workshop		
BHP WAIO Contaminated Site ID	AC-09	
Area	20,000 m^2	
Surface coverings	The workshops consist of concrete hardstanding, with an unsealed area in the central portion, between the workshops	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area. There are two evaporation ponds located to the east of the area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, soils appear mostly stable	
Drainage Channels	There are drainage channels that run adjacent to the entrance of each workshop. It is understood that the drainage channels across the area flow the oil water separator (OWS)	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	AFFF contained in the fire suppression unit of each HV is released to ground during routine maintenance. AFFF tanks on each HV is changed every 12 months. It is understood that the sediment within the drainage channels and OWS is transferred to the bioremediation farm	

Item	Description	Photographs
Heavy Vehicle Washdown Bay		
BHP WAIO Contaminated Site ID	AC-10	
Area	New washdown bay and oil water separator - 2,000 m2	
Surface coverings	The washdown bays themselves are concrete, with unsealed ground around each facility.	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, soils appear mostly stable	
Drainage Channels	Water collected from the washdown bays passes through an OWS before being transferred to the evaporation ponds. Sediment from the washdown bays is excavated and transferred to the dry bioremediation cell	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	Reports of AFFF discharged during cleaning of vehicles and residual foam on vehicles. If AFFF is present on the vehicles it would not be abstracted by OWS before entering the evaporation ponds. It is understood that the sediment within the sediment traps associated with the washdown area is transferred to the bioremediation farm	
Heavy Vehicle Evaporation Pond		
BHP WAIO Contaminated Site ID	AC-11	
Area	2,200 m^2	
Surface coverings	The area around the evaporation ponds is unsealed, with the ponds themselves lined	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, soils appear mostly stable	
Drainage Channels	Water collected from the washdown bays passes through an OWS before being transferred to the evaporation ponds.	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	Reports of AFFF discharged during cleaning of vehicles and residual foam on vehicles. If AFFF is present on the vehicles it would not be abstracted by OWS before entering the evaporation ponds.	

Item	Description	Photographs
Wastewater treatment plant (WWTP) - Packsaddle		
BHP WAIO Contaminated Site ID	AC-12	
Area	70,000 m^2	
Surface coverings	The WWTP consists of lined facultative and maturation ponds, and unlined infiltration/evaporation ponds	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, soils appear mostly stable	
Drainage Channels	There are no drainage channels associated with the infiltration ponds. The ponds are stepped down from north to south, with the infiltration ponds at a lower elevation than the facultative ponds	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	There is no evidence of the storage or utilisation of AFFF, however, WWTP are identified as a potential PFAS source	
Coondawanna Airport Refueling Area		
BHP WAIO Contaminated Site ID	AC-16	
Area	460,000 m^2	
Surface coverings	The runway and apron are tarMAC/asphalt with area around unsealed	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils at the area appear mostly stable	
Drainage Channels	There are no drainage channels associated with the airport runway or apron	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	Please refer to ? During the site inspection it was considered necessary to extend the inspection area beyond the refueling area to the airport as a whole. It was noted that there is no foam suppression unit associated with the refueling area, however, there was anecdotal evidence to support the completion of fire training exercises on the airport apron	

Item	Description	Photographs
BioMax Evaporation Ponds - Admin		
BHP WAIO Contaminated Site ID	AC-18	
Area	5,000 m^2	
Surface coverings	Unsealed, with a grass and shrub vegetation cover and evidence of mature trees	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, appear stable	
Drainage Channels	No drainage channels were identified during the inspection	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	WWTP are identified as a potential PFAS source	
Firefighting Training Ground		
BHP WAIO Contaminated Site ID	AC-21	
Area	20,000 m^2	
Surface coverings	Unsealed, with sparse vegetation cover around the perimeter of the area	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils appeared to comprise of gravelly sand and appeared mostly stable	
Drainage Channels	No drainage channels were identified during the inspection	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	It is understood that the fire training ground hasn't been utilised for a number of years, with exercises undertaken at the new firefighting training area and/or the Airport. There was no evidence of fire training activities	

Item	Description	Photographs
ESO Vehicle Washdown Area		
BHP WAIO Contaminated Site ID	AC-22	
Area	1,500 m^2	
Surface coverings	Concrete hardstand with unsealed areas around.	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils appeared to comprise of gravelly sand and appeared mostly stable	
Drainage Channels	There was evidence of surface water drainage channels leading away from the concrete washdown pad to a low-lying area surrounding the site	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	Current washdown area for fire trucks, hoses that may potentially contain AFFF are drained in the area. It is understood that the sediment within the sediment traps associated with the washdown area is transferred to the bioremediation farm	
BioMax Evaporation Pond Central - Warehouse		
BHP WAIO Contaminated Site ID	AC-23	
Area	3,000 m^2	
Surface coverings	Unsealed, with a grass and shrub vegetation cover and evidence of mature trees	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, appear stable	
Drainage Channels	No drainage channels were identified during the inspection	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	WWTP are identified as a potential PFAS source	

Item	Description	Photographs
BioMax Evaporation Pond - Forward Store		
BHP WAIO Contaminated Site ID	AC-24	
Area	2,000 m^2	
Surface coverings	Unsealed, with a grass and shrub vegetation cover and evidence of mature trees	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, appear stable	
Drainage Channels	No drainage channels were identified during the inspection	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	WWTP are identified as a potential PFAS source	
BioMax Evaporation Pond - Heritage Building		
BHP WAIO Contaminated Site ID	AC-25	
Area	750 m^2	
Surface coverings	Unsealed, with a grass and shrub vegetation cover and evidence of mature trees	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, appear stable	
Drainage Channels	No drainage channels were identified during the inspection	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations in the vicinity of area	
Evidence of AFFF Use/Storage	WWTP are identified as a potential PFAS source. The area was overgrown and there was no evidence of fencing around a pond, considered this area may now be an irrigation area.	

APPENDIX

F

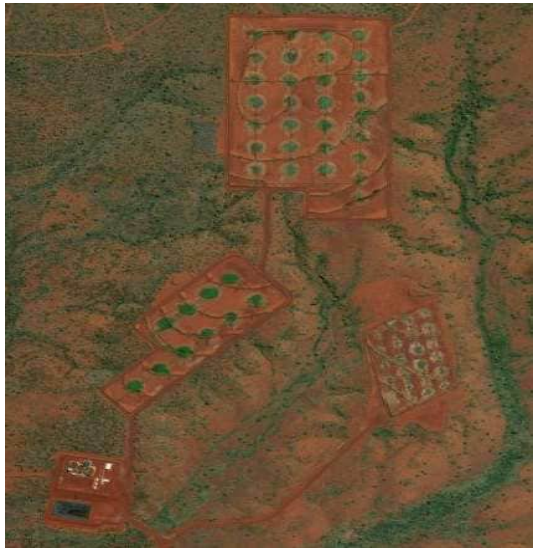
SITE INSPECTION ADDITIONAL AOPC

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Item	Description
Mulla Mulla Village Wastewater Treatment Plant and Irrigation Area	
DWER prescribed premise	The sewage facilities across MAC are classified prescribed premises under Category 54, and have a production capacity of 1,110 m^3 per day
Area	▪ WWTP - 20,000 m^2 ▪ Irrigation Area 1 (Sprayfield 1) – 50,000 m^2 ▪ Irrigation Area 2 (Sprayfield 2) – 125,000 m^2 ▪ BioMax Irrigation Area - 25,000 m^2
Surface coverings	The WWTP is on a concrete pad, with an unsealed area around. The irrigation beds are unsealed, and appear to be divided in to sub areas. Routine clearing of vegetation is reported
Topography	The area of the infrastructure is flat, however, the infrastructure itself sits on an elevated plateau
Nearby water bodies	An ephemeral creek is located approximately 500 m to the east of the area
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, appear stable
Drainage Channels	There are no drainage channels associated with the WWTP or irrigation area
New Putrescible Landfill	
DWER prescribed premise	The putrescible landfill site is a classified prescribed premise under Category 89 and has a production capacity of 5,000 tonnes per annual period
Waste disposal area	40,000 m^2
Depth of cells	Unknown
Licensed to accept	Food waste and Vegetation
Licensed Volume	5,000 tonnes per Annual Period
Construction	Cells are unlined, each cell is excavated with the excavated material subsequently utilised as cover and there is no leachate collection system and number of cells is unknown
Operation	It is understood that the landfill is operating in accordance with its licence conditions, in that 150 mm of Type 1 Inert waste, Clean Fill, Uncontaminated Fill/soil is placed over the waste as soon as practicable and 1,000 mm within 3 months of achieving final waste contours. The thickness of the cover was not measured and site operations were not observed.
Evidence of AFFF Use/Storage	There is no evidence of the storage or utilisation of AFFF, however, landfills are an identified potential source of PFAS





Item	Description	
Western, Central and Eastern Infiltration Ponds		
DWER prescribed premise	Not classified as a prescribed premise, mine dewatering is classified under Category 6 and has a combined production capacity of 34,931,000 tonnes per annual period. With a production capacity of 10,950,000 tonnes per annual period for the infiltration ponds	
Area	▪ Western Infiltration Ponds - 160,000 m^2 ▪ Central and Eastern Infiltration Ponds – 150,000 m^2 each	
Surface coverings	The ponds are unlined, with surrounding areas unsealed. There are areas of vegetation around the perimeter of each pond area and in between each pond	
Nearby water bodies	There are two unnamed creeks within the vicinity of the ponds. Discharge licences for the infiltration pond system is in place from the DWER, with the Eastern Infiltration Ponds flowing in to one creek and the Central and Western Infiltration Ponds flowing in to another	
Surface soil and stability	Surface soils in unsealed areas are typically gravelly sand, appear stable	
Drainage Channels	There are no drainage channels associated with the infiltration ponds	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	There is no evidence of the storage or utilisation of AFFF or PFAS containing products in the vicinity of the ponds. Groundwater is pumped from pit areas during dewatering programs, PFAS concentrations within groundwater is currently unknown	
New Firefighting Training Ground		
Area	~25,000 m^2	
Surface coverings	Unsealed, with sparse vegetation cover around the perimeter of the area	
Nearby water bodies	There are no natural surface water bodies in the vicinity of area	
Surface soil	Surface soils in unsealed areas are typically gravelly sand, appear stable	
Drainage Channels	There are no drainage channels	
Evidence of previous intrusive investigations	There is no evidence of previous intrusive investigations	
Evidence of AFFF Use/Storage	Historically received impacted soils, if sediment from washdown bays may have contained PFAS	

Item	Description
Inert Landfill	
DWER prescribed premise	The inert landfill site is a classified prescribed premise under Category 63 and has a production capacity of 25,000 tonnes per annual period
Waste disposal area	40,000 m^2
Depth of cells	Unknown
Licensed to accept	▪ Concrete and Plaster Board ▪ Plastics and Cardboard
Licensed Volume	25,000 tonnes per Annual Period
Construction	▪ Cells are unlined, each cell is excavated with the excavated material utilised as cover ▪ No leachate collection system ▪ Number of cells is unknown
Operation	It is understood that the landfill is operating in accordance with its licence conditions, in that 100 mm of Type 1 Inert waste, Clean Fill, Uncontaminated Fill or soil is placed over the waste as soon as practicable following the achievement of final process limits. However, the thickness of the cover was not measured during the site inspection and the operation of covering waste was not observed
Evidence of AFFF Use/Storage	There is no evidence of the storage or utilisation of AFFF, however, landfills are an identified potential source of PFAS and there was evidence of putrescible waste during the inspection





APPENDIX

G

SAMPLE NOMENCLATURE

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Shallow Soil Assessment

Sample ID's as presented in the SAQP and within the results tables presented within this report for shallow soils are presented in Table G-1.

Table G-1 Shallow Soil Assessment Sample ID

SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature
SS001	ACCSSS0001	SS042	ACCSSS0042	SS083	ACCSSS0083
SS002	ACCSSS0002	SS043	ACCSSS0043	SS084	ACCSSS0084
SS003	ACCSSS0003	SS044	Samples not collected	SS085	ACCSSS0085
SS004	ACCSSS0004	SS045		SS086	ACCSSS0086
SS005	ACCSSS0005	SS046		SS087	Samples not collected
SS006	ACCSSS0006	SS047		SS088	
SS007	ACCSSS0007	SS048	ACCSSS0048	SS089	
SS008	ACCSSS0008	SS049	ACCSSS0049	SS090	
SS009	ACCSSS0009	SS050	ACCSSS0050	SS091	
SS010	ACCSSS0010	SS051	ACCSSS0051	SS092	
SS011	ACCSSS0011	SS052	ACCSSS0052	SS093	
SS012	ACCSSS0012	SS053	ACCSSS0053	SS094	
SS013	ACCSSS0013	SS054	ACCSSS0054	SS095	
SS014	ACCSSS0014	SS055	ACCSSS0055	SS096	
SS015	ACCSSS0015	SS056	ACCSSS0056	SS097	
SS016	ACCSSS0016	SS057	ACCSSS0057	SS098	
SS017	ACCSSS0017	SS058	ACCSSS0058	SS099	ACCSSS0099
SS018	ACCSSS0018	SS059	ACCSSS0059	SS100	ACCSSS0100
SS019	ACCSSS0019	SS060	ACCSSS0060	SS101	ACCSSS0101
SS020	ACCSSS0020	SS061	ACCSSS0061	SS102	ACCSSS0102
SS021	ACCSSS0021	SS062	ACCSSS0062	SS103	Samples not collected
SS022	ACCSSS0022	SS063	ACCSSS0063	SS104	
SS023	ACCSSS0023	SS064	ACCSSS0064	SS105	Samples not collected
SS024	ACCSSS0024	SS065	ACCSSS0065	SS106	
SS025	ACCSSS0025	SS066	ACCSSS0066	SS107	
SS026	ACCSSS0026	SS067	ACCSSS0067	SS108	
SS027	ACCSSS0027	SS068	ACCSSS0068	SS109	
SS028	ACCSSS0028	SS069	ACCSSS0069	SS110	
SS029	ACCSSS0029	SS070	ACCSSS0070	Additional Samples collected	ACCSSS0111
SS030	ACCSSS0030	SS071	ACCSSS0071		ACCSSS0112
SS031	ACCSSS0031	SS072	ACCSSS0072		ACCSSS0113
SS032	ACCSSS0032	SS073	ACCSSS0073		ACCSSS0114
SS033	ACCSSS0033	SS074	ACCSSS0074		ACCSSS0115
SS034	ACCSSS0034	SS075	ACCSSS0075		ACCSSS0116
SS035	ACCSSS0035	SS076	ACCSSS0076		ACCSSS0117
SS036	ACCSSS0036	SS077	ACCSSS0077		ACCSSS0118

SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature
SS037	ACCSSS0037	SS078	ACCSSS0078		ACCSSS0119
SS038	ACCSSS0038	SS079	ACCSSS0079		ACCSSS0120
SS039	ACCSSS0039	SS080	ACCSSS0080		ACCSSS0121
SS040	ACCSSS0040	SS081	ACCSSS0081		ACCSSS0122
SS041	ACCSSS0041	SS082	ACCSSS0082		

Surface Water and Sediment

Surface Water

Sample ID's as presented in the SAQP and within the results tables presented within this report for surface water are presented in Table G-2.

Table G-2 Surface Water Sample ID

SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature
SW001	AC/CS/SW/0001	SW012	ACCSSW0012	SW023	ACCSSW0023
SW002	Sample not collected	SW013	Samples not collected	SW024	Samples not collected
SW003	ACCSSW0003	SW014		SW025	
SW004	ACCSSW0004	SW015		SW026	
SW005	ACCSSW0005	SW016	ACCSSW0016	SW027	
SW006	ACCSSW0006	SW017	ACCSSW0017	SW028	
SW007	Samples not collected	SW018	ACCSSW0018	SW029	
SW008		SW019	ACCSSW0019	Additional Samples collected	ACCSSW0030
SW009	ACCSSW0009	SW020	ACCSSW0020		ACCSSW0031
SW010	ACCSSW0010	SW021	ACCSSW0021		
SW011	ACCSSW0011	SW022	ACCSSW0022		

Sediment

Sample ID's as presented in the SAQP and within the results tables presented within this report for sediment are presented in Table G-3.

Table G-3 Sediment Sample ID

SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature	SAQP Sample ID	New Nomenclature
SD001	Sample not collected	SD011	ACCSSD0011	SD021	ACCSSD0021
SD002	ACCSSD0002	SD012	ACCSSD0012	SD022	ACCSSD0022
SD003	ACCSSD0003	SD013	ACCSSD0013	SD023	ACCSSD0023
SD004	ACCSSD0004	SD014	ACCSSD0014	SD024	ACCSSD0024
SD005	ACCSSD0005	SD015	ACCSSD0015		
SD006	ACCSSD0006	SD016	ACCSSD0016		
SD007	ACCSSD0007	SD017	ACCSSD0017		
SD008	ACCSSD0008	SD018	Samples not collected		
SD009	ACCSSD0009	SD019			
SD010	ACCSSD0010	SD020			

APPENDIX

H

FIELD ASSESSMENT RECORDS

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Surface Soil Field Data

Actual_Monitoring_date	What is the Project/Job #	New Project/Job #	Person Conducting Sampling	Bore ID #	Bore Specifics required	SWL Time	Other Observations on Bore/Site	QC Dup Sample #	CreationDate	Creator	EditDate	Editor	x	y
21/08/21	other	MAC	Mickayla_Graham,Other	SS003	no	14:40	reddy brown, clayey gravel, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8132189	-22.9649918
21/08/21	other	MAC	Mickayla_Graham,Other	SS004	no	14:41	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8130155	-22.9637489
21/08/21	other	MAC	Mickayla_Graham,Other	SS005	no	15:17	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8132181	-22.9642065
21/08/21	other	MAC	Mickayla_Graham,Other	SS006	no	14:42	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8130155	-22.9637489
21/08/21	other	MAC	Mickayla_Graham,Other	SS007	no	14:22	reddy brown clayey silt, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8128633	-22.965123
21/08/21	other	MAC	Mickayla_Graham,Other	SS008	no	14:20	reddy brown, silty clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8129016	-22.9651294
21/08/21	other	MAC	Mickayla_Graham,Other	SS009	no	14:19	reddy brown, clayey silt, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8129215	-22.9651466
21/08/21	other	MAC	Mickayla_Graham,Other	SS010	no	14:08	reddy brown, silty gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8121401	-22.9654511
21/08/21	other	MAC	Mickayla_Graham,Other	SS011	no	14:07	reddy brown, clayey silt, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8120413	-22.9654366
21/08/21	other	MAC	Mickayla_Graham,Other	SS012	no	13:59	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8113991	-22.9650407
21/08/21	other	MAC	Mickayla_Graham,Other	SS013	no	13:56	silty clay, reddy brown, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.811042	-22.9649052
21/08/21	other	MAC	Mickayla_Graham,Other	SS014	no	13:51	reddy brown, gravelly silt, dry, taken at drainage		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8110254	-22.9645974
21/08/21	other	MAC	Mickayla_Graham,Other	SS015	no	13:36	reddy brown, silty gravelly clay, dry	QC111,211	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8110178	-22.9643037
21/08/21	other	MAC	Mickayla_Graham,Other	SS016	no	13:29	reddy clay, gravelly clay, some black gravel, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.815799	-22.959461
23/08/21	other	MAC	Mickayla_Graham,Other	SS017	no	17:06	reddy brown, gravelly clay, wet	QC125/225	24/08/2021 8:49	CardnoWA_GIS	24/08/2021 8:49	CardnoWA_GIS	118.8449634	-22.9461283
23/08/21	other	MAC	Mickayla_Graham,Other	SS018	no	17:09	reddy brown, gravelly clay, dry		24/08/2021 8:49	CardnoWA_GIS	24/08/2021 8:49	CardnoWA_GIS	118.8452855	-22.9457898
23/08/21	other	MAC	Mickayla_Graham,Other	SS019	no	13:45	dark brown silt, moist		23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.9719696	-22.9143061
23/08/21	other	MAC	Mickayla_Graham,Other	SS019	no	17:11	reddy brown, gravelly clay, wet		24/08/2021 8:49	CardnoWA_GIS	24/08/2021 8:49	CardnoWA_GIS	118.8453559	-22.9457493
24/08/21	other	MAC	Mickayla_Graham,Other	SS020	no	06:45	reddy brown, gravelly clay, wet		24/08/2021 8:49	CardnoWA_GIS	24/08/2021 8:49	CardnoWA_GIS	118.8456199	-22.946733
24/08/21	other	MAC	Mickayla_Graham,Other	SS021	no	06:46	reddy brown, gravely clay, wet		24/08/2021 8:49	CardnoWA_GIS	24/08/2021 8:49	CardnoWA_GIS	118.8456021	-22.9467656
24/08/21	other	MAC	Mickayla_Graham,Other	SS022	no	06:46	reddy brown, gravely clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8456021	-22.9467656
24/08/21	other	MAC	Mickayla_Graham,Other	SS023	no	06:47	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8456021	-22.9467656
24/08/21	other	MAC	Mickayla_Graham	SS024	no	10:42	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8463259	-22.9491849
24/08/21	other	MAC	Mickayla_Graham,Other	SS025	no	10:05	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8447545	-22.9483774
24/08/21	other	MAC	Mickayla_Graham,Other	SS026	no	10:01	reddy brown, gravelly clay, wet	QC126/226	24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.7756101	-22.9385347
24/08/21	other	MAC	Mickayla_Graham	SS027	no	10:43	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8460409	-22.9489297
24/08/21	other	MAC	Mickayla_Graham	SS028	no	10:43	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8462121	-22.9487744
24/08/21	other	MAC	Mickayla_Graham,Other	SS029	no	10:52	gtavelly clay, reddy brown, slightly wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8449228	-22.9497238
24/08/21	other	MAC	Mickayla_Graham,Other	SS030	no	11:23	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8433082	-22.9524013
24/08/21	other	MAC	Mickayla_Graham,Other	SS031	no	11:23	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.843311	-22.9523992
24/08/21	other	MAC	Mickayla_Graham,Other	SS032	no	11:24	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.843311	-22.9523992
24/08/21	other	MAC	Mickayla_Graham,Other	SS033	no	11:24	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.843311	-22.9523992
24/08/21	other	MAC	Mickayla_Graham,Other	SS034	no	11:25	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.843311	-22.9523992
24/08/21	other	MAC	Mickayla_Graham,Other	SS035	no	11:25	reddy brown, gravelly clay, wet		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.843311	-22.9523992
24/08/21	other		Mickayla_Graham,Other	SS036	no	07:30	reddy brown, dry, gravelly clay		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8467171	-22.9535708
24/08/21	other	MAC	Mickayla_Graham,Other	SS037	no	07:30	gravelly clay, red brown, dry		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8457087	-22.954689
24/08/21	other	MAC	Mickayla_Graham,Other	SS038	no	07:21	dry reddy brown gravely clay		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8470272	-22.9529897
24/08/21	other	MAC	Mickayla_Graham,Other	SS039	no	06:50	reddy brown, gravelly clay, dry		24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8455684	-22.9483968
21/08/21	other	MAC	Mickayla_Graham,Other	SS040	no	08:21	reddy brown, gravelly clay, dry, fine clay psrticles with larger gravel	QC109/209	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8443129	-22.9337725
21/08/21	other	MAC	Mickayla_Graham,Other	SS041	no	08:43	reddy brown, gravelly clay, dry, fine to corse grain		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8452918	-22.9338756
21/08/21	other	MAC	Mickayla_Graham,Other	SS042	no	08:53	reddy brown silty clay, slight gravel, dry, fine to corse grains		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8437133	-22.9354738
21/08/21	other	MAC	Mickayla_Graham,Other	SS043	no	08:34	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8437896	-22.9347348
21/08/21	other	MAC	Mickayla_Graham,Other	SS048	no	09:52	reddy brown, gravelly silt, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8850945	-22.9157409
21/08/21	other	MAC	Mickayla_Graham,Other	SS049	no	09:56	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8849553	-22.9157124
21/08/21	other	MAC	Mickayla_Graham,Other	SS050	no	09:55	reddy brown, gravelly silt, hard clay under silt, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8849624	-22.9157274
21/08/21	other	MAC	Mickayla_Graham,Other	SS051	no	10:06	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8851041	-22.915584
21/08/21	other	MAC	Mickayla_Graham,Other	SS052	no	10:14	reddy brown, gravelly silty clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8850596	-22.9156189
21/08/21	other	MAC	Mickayla_Graham,Other	SS053	no	10:27	reddy brown, gtavelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8852444	-22.9157013
21/08/21	other	MAC	Mickayla_Graham,Other	SS054	no	10:33	reddy brown, gravelly clay, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.885246	-22.9156015
21/08/21	other	MAC	Mickayla_Graham,Other	SS055	no	10:29	reddy brown, gravelly silty clay, some ash present, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8852733	-22.9156983
21/08/21	other	MAC	Mickayla_Graham,Other	SS056	no	10:28	reddy brown, silty clay slight small gravel, dry		21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8852709	-22.9156972
22/08/21	other	MAC	Mickayla_Graham,Other	SS059	no	10:37	brown, gravelly silt, wet		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9649831	-22.915331
22/08/21	other	MAC	Mickayla_Graham,Other	SS060	no	10:34	reddy dark brown, gravelly silty clay, wet		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9650389	-22.9153639
22/08/21	other	MAC	Mickayla_Graham,Other	SS061	no	10:28	reddy dark brown, silty clay, wet		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9651145	-22.9153814
22/08/21	other	MAC	Mickayla_Graham,Other	SS062	no	10:26	reddy dark brown, wet, gravelly clay		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9650172	-22.9154528
22/08/21	other	MAC	Mickayla_Graham,Other	SS063	no	10:42	reddy brown, gravelly clay, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.964991	-22.9152931
22/08/21	other	MAC	Mickayla_Graham,Other	SS064	no	11:02	reddy brown, gravelly silt, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9651051	-22.9156135
22/08/21	other	MAC	Mickayla_Graham,Other	SS066	no	10:55	reddy brown, gravelly clayey silt, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9648115	-22.9154955
22/08/21	other	MAC	Mickayla_Graham,Other	SS066	no	10:56	reddy brown, gravelly silt, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9648475	-22.9154825
22/08/21	other	MAC	Mickayla_Graham,Other	SS067	no	09:05	reddy brown, gravelly, silty clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9680327	-22.9150481
22/08/21	other	MAC	Mickayla_Graham,Other	SS068	no	08:51	reddy brown, gravelly silty clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9683599	-22.914871
22/08/21	other	MAC	Mickayla_Graham,Other	SS069	no	08:41	reddy brown, gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9691476	-22.9150837
22/08/21	other	MAC	Mickayla_Graham,Other	SS071	no	09:06	reddy brown, silty clay, fine grained, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9680456	-22.9150447
22/08/21	other	MAC	Mickayla_Graham,Other	SS072	no	09:03	reddy brown, silty clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9680544	-22.9150405
22/08/21	other	MAC	Mickayla_Graham,Other	SS073	no	08:42	reddy brown, gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9690506	-22.9150925
22/08/21	other	MAC	Mickayla_Graham,Other	SS074	no	08:25	reddy brown, silty, small gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9694391	-22.9148864
22/08/21	other	MAC	Mickayla_Graham,Other	SS075	no	09:09	reddy brown, gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9680999	-22.9155535
22/08/21	other	MAC	Mickayla_Graham,Other	SS076	no	09:08	reddy brown, gravelly, silty clay, dry	QC116/216	22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9680101	-22.9155146
22/08/21	other	MAC	Mickayla_Graham,Other	SS078	no	09:41	reddy brown, gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9688979	-22.9157256
22/08/21	other	MAC	Mickayla_Graham,Other	SS080	no	09:19	reddy brown, gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9679691	-22.9158638
22/08/21	other	MAC	Mickayla_Graham,Other	SS081	no	09:29	reddy brown, silty, gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9682462	-22.9157788
22/08/21	other	MAC	Mickayla_Graham,Other	SS082	no	09:30	reddy brown, gravelly clay, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.9684546	-22.9158115
22/08/21	other	MAC	Mickayla_Graham,Other	SS083	no	12:02	reddy brown, silt, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9658694	-22.9164033
22/08/21	other	MAC	Mickayla_Graham,Other	SS084	no	11:36	reddy dark brown gravelly clayey silt, wet		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9652506	-22.9164736
22/08/21	other	MAC	Mickayla_Graham,Other	SS085	no	11:57	reddy brown, clayey silt, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9658771	-22.9164151
22/08/21	other	MAC	Mickayla_Graham,Other	SS086	no	12:00	reddy brown, clayey silt, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9658705	-22.9164067
22/08/21	other	MAC	Mickayla_Graham,Other	SS099	no	14:42	reddy brown, gravelly clayey silt, dry		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9607922	-22.9173911
22/08/21	other	MAC	Mickayla_Graham,Other	SS100	no	14:52	reddy brown, gravelly silt, dry		22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9615116	-22.9170313
22/08/21	other	MAC	Mickayla_Graham,Other	SS101	no	14:34	brown, silt, dry, vegetation		22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9607782	-22.9170157
22/08/21	other	MAC	Mickayla_Graham,Other	SS102	no	14:43	reddy brown, gravelly silt, dry		22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9607556	-22.9173601
22/08/21	other	MAC	Mickayla_Graham,Other	SS111	no	06:50	reddy brown, gravelly silt, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.8289648	-22.9538343
22/08/21	other	MAC	Mickayla_Graham,Other	SS112	no	06:44	reddy brown, clayey silt, dry	QC117/217	22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.8290137	-22.953863
22/08/21	other	MAC	Mickayla_Graham,Other	SS113	no	06:53	reddy brown, gravelly, clayey silt, dry		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.8288805	-22.9538865
22/08/21	other	MAC	Mickayla_Graham,Other	SS114	no	06:56	reddy brown, gravelly, silty clay, dry, NEPM sample taken		22/08/2021 11:13	CardnoWA_GIS	22/08/2021 11:13	CardnoWA_GIS	118.8289826	-22.9539521
22/08/21	other	MAC	Mickayla_Graham,Other	SS115	no	15:43	reddy brown, fine gravelly silt, dry, slight sulphur		22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9699223	-22.9150224
22/08/21	other	MAC	Other	SS116	no	15:53	small gravelly silt, reddy brown, sligh sulphur, dry		22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9718602	-22.9166275
22/08/21	other	MAC	Other	SS117	no	15:55	reddy brown, silty gravel, dry,		22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9744288	-22.9197861
22/08/21	other	MAC	Other	SS118	no	15:57	fine sand, reddy brown, dry		22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.974142	-22.919472
23/08/21	other	MAC	Mickayla_Graham,Other	SS120	no	13:48	dark brown silt, wet, slight sulphur odour		23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.9724142	-22.9140596
23/08/21	other	MAC	Mickayla_Graham,Other	SS121	no	13:52	light brown, sioty, gravelly clay, dry		23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.972383	-22.9139185
23/08/21	other	MAC	Mickayla_Graham,Other	SS122	no	13:53	light brown, gravelly silty clay, dry		23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.9723827	-22.9139087

Sediment Field Data

Actual_Monitoring_date	New Project/Job #	Person Conducting Sampling	Bore ID #	SWL Time	Other Observations on Bore/Site	CreationDate	Creator	EditDate	Editor	x	y
22/08/21	MAC	Mickayla_Graham,Other	SD Pond 1	12:01	brown, silt, wet, sulphur o	22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9658694	-22.9164033
22/08/21	MAC	Mickayla_Graham,Other	SD POND 2	11:30	brown, silt, wet, odour sul	22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9652712	-22.916495
19/08/21	MAC	Mickayla_Graham,Other	SD002	09:03	ay gravel, reddy brown, w	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8385095	-22.911565
19/08/21	MAC	Mickayla_Graham,Other	SD003	10:22	eddy brown, gravelly clay,	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8462011	-22.9143523
19/08/21	MAC	Mickayla_Graham,Other	SD004	11:06	brown, clayey gravel, no	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8519317	-22.9160831
20/08/21	MAC	Mickayla_Graham,Other	SD005	15:08	ddy brown, gravelly silt, w	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8551717	-22.9140273
20/08/21	MAC	Mickayla_Graham,Other	SD006	16:11	brown, gravelly, clayey si	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8696299	-22.9154672
20/08/21	MAC	Mickayla_Graham,Other	SD007	16:03	brown, granular silty grav	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8720612	-22.9151844
20/08/21	MAC	Mickayla_Graham,Other	SD009	10:52	ty gravel, reddy brown, no	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.848811	-22.91218
20/08/21	MAC	Mickayla_Graham,Other	SD010	14:53	dy brown, clayey gravel, v	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8539479	-22.9126923
20/08/21	MAC	Mickayla_Graham,Other	SD011	14:37	own, clayey gravel, wet, n	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8566657	-22.9111918
20/08/21	MAC	Other,Mickayla_Graham	SD012	15:43	ly brown, gravelly silt, clay	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8729465	-22.9136133
20/08/21	MAC	Mickayla_Graham,Other	SD013	15:34	y brown, dry, gravelly, silty	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8802511	-22.9101275
20/08/21	MAC	Mickayla_Graham,Other	SD014	15:51	own, gravelly silt, dry, no o	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8729577	-22.9147567
20/08/21	MAC	Mickayla_Graham,Other	SD015	13:29	brown, clayey gravel, no	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8743723	-22.9159523
20/08/21	MAC	Mickayla_Graham,Other	SD016	13:33	ddy brown, clayey sand, w	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8691648	-22.9098805
19/08/21	MAC	Mickayla_Graham,Other	SD017	17:11	lack, no odour, silty organi	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8637673	-22.910919
22/08/21	MAC	Mickayla_Graham,Other	SD021	15:42	sulphur, wet, silt, same por	22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9699159	-22.9150338
22/08/21	MAC	Mickayla_Graham,Other	SD022	15:43	wet sikty sulphur, same por	22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9699223	-22.9150224
20/08/21	MAC	Mickayla_Graham,Other	SD025	08:46	n, fine to coarse silt, dry, s	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	119.0176248	-22.9208999

Field Data - Groundwater

Actual_Monitoring_date	New Project/Job #	Person Conducting Sampling	Bore ID #	Bore Specifics required	Bore Depth (m)	SWL (bTOC)	SWL Time	Other Observations on Bore/Site
21/08/21	MAC	Mickayla_Graham,Other	GF0964R	no	49.246	37.457	07:34	
21/08/21	MAC	Mickayla_Graham,Other	GF0965R	no	74.687	36.869	07:59	
23/08/21	MAC	Mickayla_Graham,Other	HGA0040P	no			07:12	
23/08/21	MAC	Mickayla_Graham,Other	HGA0041	no			07:31	
23/08/21	MAC	Other,Mickayla_Graham	HGA0062	no			07:21	
23/08/21	MAC	Mickayla_Graham,Other	HGA0065P	no			07:06	
23/08/21	MAC	Mickayla_Graham,Other	HGA0070	no			07:37	
23/08/21	MAC	Mickayla_Graham,Other	HGA0074	no			07:49	
23/08/21	MAC	Mickayla_Graham,Other	HGA0077	no			07:56	
23/08/21	MAC	Mickayla_Graham,Other	HGC00163	no			11:02	
23/08/21	MAC	Mickayla_Graham,Other	HGC0165	no			11:07	
23/08/21	MAC	Mickayla_Graham,Other	HGC0189	no			11:29	
23/08/21	MAC	Mickayla_Graham,Other	HGC0200	no			08:53	
23/08/21	MAC	Mickayla_Graham,Other	HGC0202	no			08:47	
23/08/21	MAC	Mickayla_Graham,Other	HGC0213	no			11:34	
23/08/21	MAC	Mickayla_Graham,Other	HGC0221	no			09:45	enerator broken, no samp
23/08/21	MAC	Mickayla_Graham,Other	HGC0233	no			08:02	
23/08/21	MAC		HGC0243	no			10:54	broken, no sample
23/08/21	MAC	Mickayla_Graham,Other	HGC0244	no			10:55	
23/08/21	MAC	Mickayla_Graham,Other	HGC0253	no			11:16	
23/08/21	MAC	Mickayla_Graham,Other	HGC0265	no			11:25	
23/08/21	MAC	Mickayla_Graham,Other	HGE0148	no			12:15	
23/08/21	MAC	Mickayla_Graham,Other	HGE0190	no			09:00	locked off, no sample take
23/08/21	MAC	Mickayla_Graham,Other	HGE0192	no			09:42	
23/08/21	MAC	Mickayla_Graham,Other	HGE02017	no			11:43	
23/08/21	MAC	Mickayla_Graham,Other	HGE0232	no			12:47	
23/08/21	MAC	Mickayla_Graham,Other	HGE0236	no			12:03	
23/08/21	MAC	Mickayla_Graham,Other	HGE0243	no			12:32	
23/08/21	MAC	Mickayla_Graham,Other	HGE0246	no			12:25	
23/08/21	MAC	Mickayla_Graham,Other	HGE0254	no			12:01	unable to sample
24/08/21	MAC	Mickayla_Graham,Other	HGSL0014P	no			08:58	
24/08/21	MAC	Mickayla_Graham,Other	HGSL0038P	no			09:11	
24/08/21	MAC	Mickayla_Graham,Other	Potable Bore A	no			08:03	
24/08/21	MAC	Mickayla_Graham,Other	Potable Bore B	no			08:09	
21/08/21	MAC	Mickayla_Graham,Other	PSA0598R	no	167.024	121.345	09:17	
19/08/21	MAC	Mickayla_Graham,Other	PSA3767	no	77.172		11:25	DRY

Field Data - Groundwater

Reading 1 time	R1 - Temp (Co)	R1 - DO (mg/L)+-10% (or +_0.2 if DO<2mg/L)	R1 - EC (us/Cm)+-3%	R1 - TDS	R1 - pH +- 0.1	R1 - Eh (mV)+-10mV	Reading 1 Extra Observations
07:40	22.2	58.7	767	500.5	7.64	77.1	no
08:05	25	58.4	581	377	7.59	94.1	no
07:18	28.9	50.2	703	455	7.43	104.1	no
07:37	30.1	37.8	726	474.5	7.42	96.3	no
07:27	30	61.2	740	481	7.35	107.2	no
07:12	26.1	68.2	713	461.5	7.46	101.6	no
07:43	30.8	29.7	684	442	7.24	100.7	no
07:55	30.3	76.4	734	474.5	7.37	100.2	no
08:02	30.8	32.4	709	461.5	7.23	97.2	no
11:08	32.2	29.5	718	468	7.4	42.4	no
11:13	32.2	14.1	731	474.5	7.34	26.5	no
11:35	31.8	41.9	665	429	7.65	-5.5	no
08:59	32.7	20.6	713	461.5	7.29	3.7	no
08:49	30.1	48.3	580	377	7.38	80	no
11:40	31.6	45.7	695	455	7.69	-8.4	no
09:51							no
08:08	29.3	73.3	694	448.5	7.63	94.7	no
11:00							no
11:01	31.1	44.3	610	396.5	7.41	77.2	no
11:22	31.4	24.5	689	448.5	7.33	11.4	no
11:31	29	61.6	707	461.5	7.97	20.6	no
12:21	30.9	76.8	641	416	7.56	71.6	no
09:06							no
09:48	28.9	13.6	717	468	7.34	72.9	no
11:49	30.3	62.5	715	468	7.37	72.7	no
12:53	29.5	35.2	711	461.5	7.48	120	no
12:09	32	90	703	455	7.38	64.8	no
12:38	29.8	48.6	639	416	7.51	123.7	no
12:31	29.9	46.5	638	416	7.49	154	no
12:07							no
09:04	26.7	58.7	687	448.5	7.89	75.5	no
09:17	22	63.1	683	442	7.94	79.4	no
08:09	25.5	21	738	481	7.47	110.7	no
08:15	26.5	9.3	742	481	7.44	58.2	no
09:23	27.6	27.5	531	344.5	7.1	137.8	no
11:31							no

Field Data - Groundwater

Reading 2 time	R2 - Temp (Co)	R2 - DO (mg/L)+-10% (or +_0.2 if DO<2mg/L)	R2 - EC (us/Cm)+-3%	R2 - TDS	R2 - pH +- 0.1	R2 - Eh (mV)+-10mV	Reading 2 Extra Observations
07:45	21.8	58.2	767	500.5	7.64	80.1	no
08:10	24.7	54.4	582	377	7.6	93.9	no
07:23	28.1	46.2	710	461.5	7.44	104.6	no
07:42	29	41.1	729	474.5	7.42	97.8	no
07:32	28.5	53.5	745	487.5	7.37	108.4	no
07:17	25.8	65.4	719	468	7.46	103.9	no
07:48	29.8	38.3	691	448.5	7.25	102.1	no
08:00	29.2	73.2	732	474.5	7.36	101.8	no
08:07	30	35	715	461.5	7.23	96.8	no
11:13	31.7	26.2	721	468	7.41	42	no
11:18	31.4	11.8	734	474.5	7.34	29.9	no
11:40	31	38.8	671	435.5	7.66	-4.7	no
09:04	31.5	18.1	718	468	7.3	8.7	no
08:54	28.5	48.5	582	377	7.37	79.4	no
11:45	30	40.8	709	461.5	7.69	1	no
09:56							no
08:13	29.1	63.7	696	455	7.63	95.4	no
11:05							no
11:06	30.5	40.1	612	396.5	7.41	61	no
11:27	30.5	26.8	690	448.5	7.33	14.1	no
11:36	28.3	55.2	712	461.5	7.98	37	no
12:26	30.4	63.1	644	416	7.56	75.7	no
09:11							no
09:53	28.8	14.3	721	468	7.34	75.8	no
11:54	30	59.3	716	468	7.37	77.2	no
12:58	29.1	31.2	713	461.5	7.48	118.7	
12:14	31.1	64.2	717	468	7.36	70.4	no
12:43	29.5	44.4	639	416	7.51	122.6	no
12:36	29.3	53	643	416	7.5	146.7	no
12:12							no
09:09	24.7	62.5	690	448.5	7.89	83.5	no
09:22	22.1	55.2	685	448.5	7.95	80.2	no
08:14	24.5	22.4	742	481	7.47	112.2	no
08:20	25.8	8.7	751	487.5	7.44	45	no
09:28	27.4	27	531	344.5	7.1	132.3	no
11:36							no

Field Data - Groundwater

Reading 3 time	R3 - Temp (Co)	R3 - DO (mg/L)+-10% (or +_0.2 if DO<2mg/L)	R3 - EC (us/Cm)+-3%	R3 - TDS	R3 - pH +- 0.1	R3 - Eh (mV)+-10mV	eading 3 Extra Observatio
07:50	21.7	58.2	768	500.5	7.64	82.3	no
08:15	24.6	58	581	377	7.6	94.2	no
07:28	27.4	43.4	710	461.5	7.44	105.1	no
07:47	28	33.3	729	474.5	7.42	99.9	no
07:37	28.1	54.6	744	481	7.37	108.9	no
07:22	25.7	72.6	718	468	7.46	106.1	no
07:53	29	33.1	691	448.5	7.25	102.5	no
08:05	28.8	65.5	735	481	7.36	103.5	no
08:12	29.2	29.3	714	461.5	7.23	95.6	no
11:18	31	28.5	721	468	7.41	38.8	no
11:23	31.1	12	733	474.5	7.34	32.6	no
11:45	30.6	36.3	670	435.5	7.66	5.6	no
09:09	30.6	18.5	717	468	7.3	10.6	no
08:59	28.1	43.3	582	377	7.37	80.8	no
11:50	29.7	46.7	709	461.5	7.69	6.3	no
10:01							no
08:18	29	59.5	697	455	7.63	96	no
11:10							no
11:11	29.3	42.7	609	396.5	7.41	64.5	no
11:32	30.2	24.5	689	448.5	7.32	17.3	no
11:41	28.1	63	711	461.5	7.98	47.5	no
12:31	29.9	68.4	5.41	416	7.56	80.3	no
09:16							no
09:58	28.7	14.6	722	468	7.34	76.8	no
11:59	29.6	47.9	717	468	7.37	84.8	no
13:03	28.7	29.4	712	461.5	7.5	115.7	no
12:19	30.6	55.2	717	468	7.37	72.2	no
12:48	29.3	41	639	416	7.52	121.3	no
12:41	28.9	46.4	643	416	7.5	138.6	no
12:17							no
09:14	24.7	54.2	692	448.5	7.89	84.1	no
09:27	21.8	61.7	687	448.5	7.95	80.8	no
08:19	24.1	19.2	745	481	7.47	113	no
08:25	25.2	12	749	487.5	7.44	25.3	no
09:33	27.4	26.7	531	344.5	7.1	130.7	no
11:41							no

Field Data - Groundwater

CreationDate	Creator	EditDate	Editor	x	y
21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8375228	-22.9345739
21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8198053	-22.9413865
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	119.0387118	-22.923002
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	119.0324648	-22.9214896
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	119.0353813	-22.9230073
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	119.0418321	-22.9271056
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	119.0356396	-22.9229507
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	119.0196117	-22.9218405
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	119.0234467	-22.9218669
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9734107	-22.9240033
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9731208	-22.9240563
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9627295	-22.9262272
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.973756	-22.9221403
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9784318	-22.9226912
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9659164	-22.925183
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9368113	-22.9290376
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9996175	-22.9226864
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9735125	-22.9250193
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9737709	-22.9245409
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.960688	-22.9182341
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9625951	-22.9258464
23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.9148878	-22.9320162
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.97375	-22.9219041
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9321737	-22.9304055
23/08/2021 7:52	CardnoWA_GIS	23/08/2021 7:52	CardnoWA_GIS	118.9652625	-22.9266124
23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.9785167	-22.9194333
23/08/2021 7:53	CardnoWA_GIS	23/08/2021 7:53	CardnoWA_GIS	118.9285705	-22.9315574
23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.9103257	-22.9325424
23/08/2021 7:54	CardnoWA_GIS	23/08/2021 7:54	CardnoWA_GIS	118.9092789	-22.932376
23/08/2021 7:53	CardnoWA_GIS	23/08/2021 7:53	CardnoWA_GIS	118.9274876	-22.9319389
24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8798871	-22.9864163
24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.7730659	-22.9721823
24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8079047	-22.9354058
24/08/2021 8:50	CardnoWA_GIS	24/08/2021 8:50	CardnoWA_GIS	118.8038866	-22.9349645
21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8820928	-22.9166911
21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8791589	-22.917796

Surface Water Field Data

Actual_Monitoring_date	What is the Project/Job #	New Project/Job #	Person Conducting Sampling	Bore ID #	Bore Specifics required	SWL (bTOC)	SWL Time	Other Observations on Bore/Site
22/08/21	other	MAC	Mickayla_Graham,Other	SW021	no		11:51	
22/08/21	other	MAC	Mickayla_Graham,Other	SW022	no		11:24	
19/08/21	other	MAC	Mickayla_Graham,Other	SW003	no	0.01	08:55	SURFACE WATER
19/08/21	other	MAC	Mickayla_Graham,Other	SW004	no	0.01	10:14	SW
19/08/21	other	MAC	Mickayla_Graham,Other	SW005	no	0.01	11:04	
20/08/21	other	MAC	Mickayla_Graham,Other	SW006	no	0.01	15:05	
20/08/21	other	MAC	Mickayla_Graham,Other	SW007	no		16:04	DRY
20/08/21	other	MAC	Mickayla_Graham,Other	SW008	no		15:53	DRY
20/08/21	other	MAC	Mickayla_Graham,Other	SW009	no		10:57	
20/08/21	other	MAC	Mickayla_Graham,Other	SW010	no	0.01	10:47	
20/08/21	other	MAC	Mickayla_Graham,Other	SW011	no	0.01	14:50	
20/08/21	other	MAC	Mickayla_Graham,Other	SW012	no		14:18	
20/08/21	other	MAC	Mickayla_Graham,Other	SW013	no		15:38	DRY - NO SAMPLE
20/08/21	other	MAC	Mickayla_Graham,Other	SW014	no		15:37	DRY - NO SAMPLE
20/08/21	other	MAC	Mickayla_Graham,Other	SW015	no		15:51	DRY
20/08/21	other	MAC	Mickayla_Graham,Other	SW016	no		11:52	
20/08/21	other	MAC	Mickayla_Graham,Other	SW017	no		11:43	
19/08/21	other	MAC	Mickayla_Graham,Other	SW018	no	0.01	16:55	
22/08/21	other	MAC	Mickayla_Graham,Other	SW019	no		15:27	
22/08/21	other	MAC	Mickayla_Graham,Other	SW020	no		15:24	
20/08/21	other	MAC	Mickayla_Graham,Other	SW023	no		08:37	

Surface Water Field Data

Reading 1 time	R1 - Temp (Co)	R1 - DO (mg/L)+-10% (or +_0.2 if DO<2mg/L)	R1 - EC (us/Cm)+-3%	R1 - TDS	R1 - pH +- 0.1	R1 - Eh (mV)+-10mV	Reading 1 Extra Observations	Reading 2 time
11:57	22.4	12.8	800	520	7.9	-200.7	no	12:02
11:30	22.5	31	853	552.5	8.1	54.8	no	11:35
09:01	15.9	95.3	659	429	8.5	71.3	no	09:06
10:20	18.2	107.3	649	422.5	8.64	61.5	no	10:25
11:10	19.6	87.5	664	429	8.43	59.5	no	11:15
15:11	25	79.3	669	435.5	8.49	44	no	15:16
16:10							no	16:15
15:59							no	16:04
11:03	24.1	80.6	670	435.5	8.49	49.6	no	11:08
10:53	24.3	55.4	717	468	8.14	48.4	no	10:58
14:56	24.9	68.5	669	435.5	8.48	53	no	15:01
14:24	27.2	90.5	695	455	8.33	59.5	no	14:29
15:44							no	15:49
15:43							no	15:48
15:57							no	16:02
11:58	24.5	333.3	960	624	10.04	-0.9	no	12:03
11:49	23.7	176.2	846	552.5	9.87	-5.5	no	11:54
17:01	25.4	124.7	9380	6097	9.45	1	no	17:06
15:33	22.9	73.2	1041	676	8.27	47	no	15:38
15:30	24.4	100.8	1021	663	8.84	32.3	no	15:35
08:43	20.3	0.2	4556	2964	8.42	-267.8	no	08:48

Surface Water Field Data

R2 - Temp (Co)	R2 - DO (mg/L)+-10% (or +_0.2 if DO<2mg/L)	R2 - EC (us/Cm)+-3%	R2 - TDS	R2 - pH +- 0.1	R2 - Eh (mV)+-10mV	Reading 2 Extra Observations	Reading 3 time	R3 - Temp (Co)
23.6	1.05	801	520	7.91	-198.3	no	12:07	23.7
22.7	26.4	852	552.5	8.1	52.8	no	11:40	22.7
16	95	659	429	8.51	71.5	no	09:11	16
18.3	106.3	657	429	8.64	54.7	no	10:30	18.4
19.6	86.5	663	429	8.43	59.2	no	11:20	19.6
25.3	79.3	668	435.5	8.49	44.7	no	15:21	25.5
						no	16:20	
						no	16:09	
24.3	76.4	670	435.5	8.49	49.5	no	11:13	24.4
24.4	51.1	717	468	8.14	52.3	no	11:03	24.5
25	66.3	669	435.5	8.48	52	no	15:06	25
27.1	76.5	694	448.5	8.33	59.3	no	14:34	27.1
						no	15:54	
						no	15:53	
						no	16:07	
24.4	313.5	961	624	10.05	-3	no	12:08	24.4
23.8	162	845	552.5	9.87	-6.1	no	11:59	24
25.7	149.1	5497	3575	9.46	3.5	no	17:11	25.7
23	72.2	1042	676	8.27	47.6	no	15:43	23.3
24.5	96.7	1021	663	8.83	33.3	no	15:40	25
20.4	0.3	4555	2964	8.42	-268.8	no	08:53	20.6

Surface Water Field Data

R3 - DO (mg/L)+-10% (or +_0.2 if DO<2mg/L)	R3 - EC (us/Cm)+-3%	R3 - TDS	R3 - pH +- 0.1	R3 - Eh (mV)+-10mV	Reading 3 Extra Observations	QC Dup Sample #	Does the sample have an Odour ?	Odour Comments
11.8	801	520	7.91	-195.8	no		yes	sulphur
25.9	853	552.5	8.1	51.5	no		yes	sulphur
95	659	429	8.51	71.6	no	QC101/102	no	
108.4	656	429	8.65	53.4	no		no	
86.5	663	429	8.43	59.2	no		no	
78.6	669	435.5	8.48	45.9	no		no	
					no			
					no			
76.4	670	435.5	8.49	49.5	no		no	
51.2	718	468	8.15	53.8	no		no	
63.5	669	435.5	8.48	50.7	no		no	
72.4	695	448.5	8.34	59.2	no	QC105/205	no	
					no			
					no			
					no			
301.1	960	624	10.05	-3.7	no		no	
139.4	847	552.5	9.86	-5.5	no		no	
142.3	5488	3563.5	9.45	5.7	no			
67.8	1043	676	8.27	48.8	no		no	
89.1	1022	663	8.83	32.5	no		no	
0.3	4557	2964	8.42	-222.3	no		yes	slight sulphur

Surface Water Field Data

What colour is the Sample	CreationDate	Creator	EditDate	Editor	x	y
Brown	22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.960688	-22.9182341
Clear,Brown	22/08/2021 11:14	CardnoWA_GIS	22/08/2021 11:14	CardnoWA_GIS	118.9652632	-22.9164782
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8385177	-22.9115634
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8461951	-22.9143143
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8518406	-22.9161807
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8802511	-22.9101275
	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8720684	-22.9151802
	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8730414	-22.9148856
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8457372	-22.9127351
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8487995	-22.9120875
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8539294	-22.9126749
Clear	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8802511	-22.9101275
	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8753731	-22.9125977
	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8742496	-22.9115168
	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8729531	-22.9147799
Green	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.862206	-22.9122534
Green	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8620835	-22.9122275
	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	118.8633079	-22.9091776
Clear	22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.9699689	-22.9146835
Clear	22/08/2021 11:15	CardnoWA_GIS	22/08/2021 11:15	CardnoWA_GIS	118.968693	-22.9166449
Brown,Black	21/08/2021 10:28	CardnoWA_GIS	21/08/2021 10:28	CardnoWA_GIS	119.0176691	-22.9209241

APPENDIX

I

DATA VALIDATION

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Item	EP2109734	EP2110221	EP2110231
This appendix reviews the Quality Assurance (QA) and Quality Control (QC) documentation. Quality Assurance encompasses the actions, procedures, checks and decisions undertaken to ensure the 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.			
Project Quality Plan/Work Plan and Data Quality Objectives	Cardno was engaged by BHP WAIO (the client) to provide contaminated sites assessment services for the Mining Area C Mine, Pilbara, WA (the Site). The investigation was carried out across one sampling event: ▪ 2021 Investigation - between the 18th August 2021 and 24th August 2021. The investigation is in accordance with the proposed scope of work, as documented in the Sampling and Analysis Quality Plan, Rev 4.1, CW1173100_SAQP_BHP_MaC_Rev4.1, 4 August 2021 issued to the client and in general compliance with the Australian standards AS 4482.1- 2005 “Guide to Sampling and Investigation of Potentially Contaminated Soil, Part 1: Non-volatile and Semi-volatile Compounds”, DER (2014) “Assessment and management of contaminated sites”, DWER (2021) “Assessment and management of contaminated sites and NEPM “National Environment Protection (Assessment of Site Contamination) Measure”.		
Media	▪ Groundwater ▪ Surface Water	▪ Surface Soil ▪ Surface Soil Leachate ▪ Sediment ▪ Sediment Leachate	▪ Surface Soil ▪ Surface Soil Leachate ▪ Sediment ▪ Sediment Leachate
Field QA/QC Samples	▪ A rinsate blank was collected during each day of sampling (QC102, QC107, QC113, QC118, QC123, QC128) during the investigation and submitted for a suite of PFAS - Super Ultra Trace. Concentrations were reported below the laboratory LOR. ▪ A field blank was collected during each day of sampling (QC103, QC108, QC114, QC119, QC124, QC129) during the investigation and submitted for a suite of PFAS - Super Ultra Trace. Concentrations were reported below the laboratory LOR. ▪ A total of 11 trip blanks (TBW738 – TBW748) was submitted for a suite of PFAS - Super Ultra Trace. Concentrations were reported below the laboratory LOR.		
Laboratory QA/QC	▪ No Method Blank value outliers occur. ▪ No Duplicate outliers occur. ▪ No Laboratory Control outliers occur. ▪ No Matrix Spike outliers occur. ▪ Analysis Holding Time Outliers exist – discussed below. ▪ Quality Control Sample Frequency Outliers exist – discussed below	▪ No Method Blank value outliers occur. ▪ No Duplicate outliers occur. ▪ No Laboratory Control outliers occur. ▪ Matrix Spike outliers exist - discussed below. ▪ Analysis Holding Time Outliers exist – discussed below. ▪ Quality Control Sample Frequency Outliers exist – discussed below	
Regular Sample Surrogates	All surrogate samples are within the regular sample matrices.	All surrogate samples are within the regular sample matrices.	
Holding Time Outliers	▪ pH - QC101, SW003, SW004 and SW005 – 15 Days Overdue ▪ pH - QC105, SW006, SW009, SW010, SW011, SW012, SW016 and SW017 – 14 Days Overdue ▪ pH - GF0964R, GF0965R, PSA0598R and SF2203R – 13 Days Overdue ▪ pH - QC120, QC121, QC122, SW019, SW020, SW021, SW022, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077P, HGC0163P, HGC0165P, HGC0244P, HGC0253P, HGC0265P, HGC0189P, HGC0200P, HGC0213P, HGC0202P, HGC0233P, HGE0243P, HGE0246P, HGE0148P, HGE0201P, HGE0192P, HGE0226P and HGE0252 – 12 Days Overdue ▪ pH - HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2 and SW001 – 10 Days Overdue ▪ Sodium Adsorption Ratio (SAR) - QC101, SW003, SW004 and SW005 – 8 Days Overdue ▪ SAR - QC105, SW006, SW009, SW010, SW011, SW012, SW016 and SW017 – 7 Days Overdue ▪ SAR - GF0964R, GF0965R, PSA0598R and SF2203R – 6 Days Overdue ▪ SAR - QC120, QC121, QC122, SW019, SW020, SW021, SW022, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077P, HGC0163P, HGC0165P, HGC0244P, HGC0253P, HGC0265P, HGC0189P, HGC0200P, HGC0213P, HGC0202P, HGC0233P, HGE0243P, HGE0246P, HGE0148P, HGE0201P, HGE0192P, HGE0226P and HGE0252 – 5 Days Overdue ▪ SAR - HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2 and SW001 – 3 Days Overdue	▪ pH in soil using 0.01M CaCl extract – SS003 and SS014 – 10 Days Overdue ▪ pH in soil using 0.01M CaCl extract – SS069 and SS080 – 9 Days Overdue ▪ pH 1:5 – SS003 and SS014 – 10 Days Overdue ▪ pH 1:5 – SS069 and SS080 – 9 Days Overdue ▪ Conductivity (1:5) – SS003 and SS014 – 10 Days Overdue ▪ Conductivity (1:5) – SS069 and SS080 – 9 Days Overdue ▪ Moisture Content (Dried @ 105-110°C) - QC104, SD002, SD003, SD004 – 7 Days Overdue ▪ Moisture Content (Dried @ 105-110°C) - SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS015, SS016 – 6 Days Overdue ▪ Moisture Content (Dried @ 105-110°C) - SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS070, SS071, SS072, SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS081, SS082, QC115, QC116 – 5 Days Overdue ▪ Moisture Content (Dried @ 105-110°C) – SS003 and SS014 – 5 Days Overdue ▪ Moisture Content (Dried @ 105-110°C) - SS069 and SS080 – 4 Days Overdue	

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	▪ Total Hardness as CaCO3 - QC101, SW003, SW004 and SW005 – 8 Days Overdue ▪ Total Hardness as CaCO3 - QC105, SW006, SW009, SW010, SW011, SW012, SW016 and SW017 – 7 Days Overdue ▪ Total Hardness as CaCO3 - GF0964R, GF0965R, PSA0598R and SF2203R – 6 Days Overdue ▪ Total Hardness as CaCO3 - QC120, QC121, QC122, SW019, SW020, SW021, SW022, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077P, HGC0163P, HGC0165P, HGC0244P, HGC0253P, HGC0265P, HGC0189P, HGC0200P, HGC0213P, HGC0202P, HGC0233P, HGE0243P, HGE0246P, HGE0148P, HGE0201P, HGE0192P, HGE0226P and HGE0252 – 5 Days Overdue ▪ Total Hardness as CaCO3 - HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2 and SW001 – 3 Days Overdue ▪ Alkalinity - QC101, SW003, SW004 and SW005 – 1 Days Overdue ▪ Dissolved Major Cations - QC101, SW003, SW004 and SW005 – 8 Days Overdue ▪ Dissolved Major Cations - QC105, SW006, SW009, SW010, SW011, SW012, SW016 and SW017 – 7 Days Overdue ▪ Dissolved Major Cations - GF0964R, GF0965R, PSA0598R and SF2203R – 6 Days Overdue ▪ Dissolved Major Cations - QC120, QC121, QC122, SW019, SW020, SW021, SW022, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077P, HGC0163P, HGC0165P, HGC0244P, HGC0253P, HGC0265P, HGC0189P, HGC0200P, HGC0213P, HGC0202P, HGC0233P, HGE0243P, HGE0246P, HGE0148P, HGE0201P, HGE0192P, HGE0226P and HGE0252 – 5 Days Overdue ▪ Dissolved Major Cations - HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2 and SW001 – 3 Days Overdue		
Laboratory Matrix Spikes	N/A	▪ SS048 - 6:2 Fluorotelomer sulfonic acid (6:2 FTS) - MS recovery not determined, background level greater than or equal to 4x spike level. ▪ SS073 - 6:2 Fluorotelomer sulfonic acid (6:2 FTS) - MS recovery not determined, background level greater than or equal to 4x spike level. ▪ SS073 - 8:2 Fluorotelomer sulfonic acid (6:2 FTS) - MS recovery not determined, background level greater than or equal to 4x spike level. ▪ SS073 - 10:2 Fluorotelomer sulfonic acid (6:2 FTS) - MS recovery not determined, background level greater than or equal to 4x spike level.	
Frequency of Quality Control Samples	The following QC frequency non-conformance was reported from the primary laboratory: Laboratory Duplicates ▪ Per- and Polyfluoroalkyl Substances (PFAS) – (0% actual, 10% expected). Matrix Spikes ▪ Per- and Polyfluoroalkyl Substances (PFAS) – (0% actual, 5% expected).	The following QC frequency non-conformance was reported from the primary laboratory: Laboratory Duplicates ▪ Per- and Polyfluoroalkyl Substances (PFAS) – (0% actual, 10% expected). Matrix Spikes ▪ Per- and Polyfluoroalkyl Substances (PFAS) – (0% actual, 5% expected).	
RPD – Intra-laboratory	The following analytes recorded RPDs outside of the acceptable range: ▪ Carbonate Alkalinity (as CaCO3) – ACCSSW0003 (12 mg/L) / QC101 (6 mg/L) = 67%. ▪ Ionic Balance – ACCSSW0012 (7.0 mg/L) / QC105 (2.86 mg/L) = 84%. ▪ Perfluorononanoic acid (PFNA) – ACCSSW0012 (0.0007 mg/L) / QC105 (<0.0005 mg/L) = 33%. ▪ Flouride – HGA0065P (0.3 mg/L) / QC120 (0.2 mg/L) = 40%. ▪ Ionic Balance – HGA0065P (1.64 mg/L) / QC120 (7.78 mg/L) = 130%. ▪ Ionic Balance – HGC0233P (0.75 mg/L) / QC121 (3.2 mg/L) = 124%.	The following analytes recorded RPDs outside of the acceptable range: ▪ Perfluorobutanoic acid (PFBA) – ACCSSS0015 (0.0157 µg/L) / QC111 (0.002 mg/L) = 155%. ▪ Perfluoroheptanoic acid (PFHpA) – ACCSSS0015 (0.0354 µg/L) / QC111 (0.0518 mg/L) = 38%. ▪ Perfluoroheptanoic acid (PFHpA) – ACCSSS0015 (0.0008 mg/kg) / QC111 (0.0011 mg/kg) = 32%. ▪ Perfluorodecanoic acid (PFDA) – ACCSSS0015 (0.0111 µg/L) / QC111 (0.0170 mg/L) = 42%.	The following analytes recorded RPDs outside of the acceptable range: ▪ Sum of PFAS – ACCSSS0017 (<0.0002 µg/L) / QC125 (0.0008 µg/L) = 56%.

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		▪ Perfluoroundecanoic acid (PFUnDA) – ACCSSS0015 (0.0009 µg/L) / QC111 (0.0018 mg/L) = 67%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) – ACCSSS0015 (16.4 µg/L) / QC111 (9.87 µg/L) = 50%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) – ACCSSS0015 (0.318 mg/kg) / QC111 (0.231 mg/kg) = 32%. ▪ 10:2 Fluorotelomer Sulfonate (10:2 FtS) – ACCSSS0015 (0.002 µg/L) / QC111 (0.003 µg/L) = 40%. ▪ Sum of PFAS – ACCSSS0015 (17 µg/L) / QC111 (10.5 µg/L) = 47%. ▪ Sum of PFHxS and PFOS - ACCSSS0015 (0.0013 µg/L) / QC111 (0.0008 µg/L) = 47%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) – ACCSSS0057 (0.002 µg/L) / QC110 (0.022 µg/L) = 167%. ▪ 8:2 Fluorotelomer Sulfonate (8:2 FtS) – ACCSSS0057 (<0.001 µg/L) / QC110 (0.002 µg/L) = 67%. ▪ Sum of PFAS – ACCSSS0057 (0.004 µg/L) / QC110 (0.0259 µg/L) = 146%. ▪ Perfluorooctane sulfonic acid (PFOS) – ACCSSS0070 (0.0004 µg/L) / QC11 (<0.0002 µg/L) = 67%. ▪ Perfluoropentanoic acid (PFPeA) – ACCSSS0070 (0.0508 µg/L) / QC115 (0.0314 µg/L) = 47%. ▪ Perfluoropentanoic acid (PFPeA) – ACCSSS0070 (0.0008 mg/kg) / QC115 (0.0014 mg/kg) = 55%. ▪ Perfluorohexanoic acid (PFHxA) – ACCSSS0070 (0.4 µg/L) / QC115 (0.238 µg/L) = 51%. ▪ Perfluoroheptanoic acid (PFHpA) – ACCSSS0070 (0.0501 µg/L) / QC115 0.0248 µg/L) = 68%. ▪ Perfluorooctanoate (PFOA) – ACCSSS0070 (0.0032 mg/kg) / QC115 (0.005 mg/kg) = 44%. ▪ Perfluorononanoic acid (PFNA) – ACCSSS0070 (0.0147 µg/L) / QC115 (0.0095 µg/L) = 43%. ▪ Perfluorodecanoic acid (PFDA) – ACCSSS0070 (0.0541 µg/L) / QC115 (0.0296 µg/L) = 59%. ▪ Perfluorododecanoic acid (PFDoDA) – ACCSSS0070 (0.0012 µg/L) / QC115 (0.0005 µg/L) = 82%. ▪ 8:2 Fluorotelomer sulfonate (8:2 FtS) – ACCSSS0070 (2.21 µg/L) / QC115 (1.46 µg/L) = 41%. ▪ 10:2 Fluorotelomer sulfonate (10:2 FtS) – ACCSSS0070 (0.023 µg/L) / QC115 (0.005 µg/L) = 129%. ▪ 10:2 Fluorotelomer sulfonate (10:2 FtS) – ACCSSS0070 (0.0288 mg/kg) / QC115 (0.0540 mg/kg) = 61%. ▪ Sum of PFHxS and PFOS – ACCSSS0070 (0.001 µg/L) / QC115 (<0.0002 µg/L) = 133%. ▪ Perfluorohexane sulfonic acid (PFHxS) – ACCSSS0076 (<0.0016 µg/L) / QC115 (0.0032 µg/L) = 67%. ▪ Perfluorooctane sulfonic acid (PFOS) – ACCSSS0076 (<0.0016 µg/L) / QC116 (0.0026 µg/L) = 48%. ▪ Perfluorohexanoic acid (PFHxA) – ACCSSS0076 (0.001 µg/L) / QC116 (0.0016 µg/L) = 46%. ▪ Perfluoroheptanoic acid (PFHpA) – ACCSSS0076 (0.0053 µg/L) / QC116 (0.0035 µg/L) = 41%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) – ACCSSS0076 (2.36 µg/L) / QC116 (4.71 µg/L) = 66%. ▪ 10:2 Fluorotelomer Sulfonate (10:2 FtS) – ACCSSS0076 (0.007 µg/L) / QC116 (0.003 µg/L) = 80%. ▪ Sum of PFAS – ACCSSS0076 (2.92 µg/L) / QC116 (5.18 µg/L) = 56%. ▪ Sum of PFHxS and PFOS – ACCSSS0076 (<0.0016 µg/L) / QC116 (0.0058 µg/L) = 114%.	
RPD – Inter-laboratory	All analytes recorded RPDs within the acceptable range.	The following analytes recorded RPDs outside of the acceptable range:	The following analytes recorded RPDs outside of the acceptable range:

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		▪ Perfluorooctane sulfonic acid (PFOS) – ACCSSD0011 (<0.0002 µg/L / QC206 (0.002 µg/L) = 164%. ▪ Perfluorobutanoic acid (PFBA) – ACCSSD0011 (<0.002 µg/L / QC206 (0.007 µg/L) = 111%. ▪ Sum of PFAS – ACCSSD0011 (<0.0002 µg/L / QC206 (0.009 µg/L) = 191%. ▪ Sum of PFHxS and PFOS - ACCSSD0011 (<0.0002 µg/L / QC206 (0.009 µg/L) = 191%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) – ACCSSS0015 (0.318 mg/kg) / QC211 (0.2 mg/kg) = 46%. ▪ Sum of PFAS – ACCSSS0015 (0.334 mg/kg) / QC211 (0.2 mg/kg) = 50%. ▪ Perfluoropentanoic acid (PFPeA) – ACCSSS0015 (0.0386 µg/L) / QC211 (0.017 µg/L) = 78%. ▪ Perfluorohexanoic acid (PFHxA) – ACCSSS0015 (0.136 µg/L) / QC211 (0.017 µg/L) = 57%. ▪ Perfluorooctanoate (PFOA) – ACCSSS0015 (0.224 µg/L) / QC211 (0.11 µg/L) = 68%. ▪ Perfluorononanoic acid (PFNA) – ACCSSS0015 (0.0606 µg/L) / QC211 (0.027 µg/L) = 77%. ▪ Perfluorodecanoic acid (PFDA) – ACCSSS0015 (0.0111 µg/L) / QC211 (0.005 µg/L) = 76%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) – ACCSSS0015 (16.4 µg/L) / QC211 (2.8 µg/L) = 142%. ▪ 8:2 Fluorotelomer Sulfonate (8:2 FtS) – ACCSSS0015 (0.088 µg/L) / QC211 (0.044 µg/L) = 67%. ▪ 10:2 Fluorotelomer Sulfonate (10:2 FtS) – ACCSSS0015 (0.002 µg/L) / QC211 (<0.001 µg/L) = 67%. ▪ Sum of PFAS – ACCSSS0015 (17 µg/L) / QC211 (3.122 µg/L) = 138%. ▪ Perfluorooctanoate (PFOA) – ACCSSS0070 (0.0032 mg/kg) / QC215 (0.0059 mg/kg) = 59%. ▪ 6:2 Fluorotelomer sulfonate (6:2 FtS) – ACCSSS0070 (0.969 mg/kg) / QC215 (0.58 mg/kg) = 50%. ▪ 8:2 Fluorotelomer sulfonate (8:2 FtS) – ACCSSS0070 (0.0894 mg/kg) / QC215 (0.14 mg/kg) = 44%. ▪ 10:2 Fluorotelomer sulfonate (10:2 FtS) – ACCSSS0070 (0.0288 mg/kg) / QC215 (0.071 mg/kg) = 85%. ▪ Perfluorooctane sulfonic acid (PFOS) – ACCSSS0070 (0.0004 µg/L) / QC215 (0.001 µg/L) = 86%. ▪ Perfluorobutanoic acid (PFBA) – ACCSSS0070 (0.0653 µg/L) / QC215 (0.11 µg/L) = 51%. ▪ Perfluorohexanoic acid (PFHxA) – ACCSSS0070 (0.4 µg/L) / QC215 (0.2 µg/L) = 67%. ▪ Perfluoroheptanoic acid (PFHpA) – ACCSSS0070 (0.0501 µg/L) / QC215 (0.026 µg/L) = 63%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) – ACCSSS0070 (48 µg/L) / QC215 (4.5 µg/L) = 166%. ▪ 10:2 Fluorotelomer Sulfonate (10:2 FtS) – ACCSSS0070 (0.023 µg/L) / QC215 (0.046 µg/L) = 67%. ▪ Sum of PFAS – ACCSSS0070 (51.1 µg/L) / QC215 (7.152 µg/L) = 151%. ▪ 6:2 Fluorotelomer Sulfonate (6:2 FtS) (0.113 mg/kg) / QC216 (0.2 mg/kg) = 56%. ▪ Sum of PFAS (0.149 mg/kg) / QC216 (0.237 mg/kg) = 46%. ▪ Perfluorohexane sulfonic acid (PFHxS) – ACCSSS0076 (<0.0016 µg/L) / QC216 (0.003 µg/L) = 61%. ▪ Perfluorooctane sulfonic acid (PFOS) – ACCSSS0076 (<0.0016 µg/L) / QC216 (0.004 µg/L) = 86%.	▪ Perfluorooctane sulfonic acid (PFOS) – ACCSSS0017 (<0.0002 µg/L / QC225 (0.004 µg/L) = 181%. ▪ Perfluorohexanoic acid (PFHxA) – ACCSSS0017 (<0.0005 µg/L / QC225 (0.001 µg/L) = 67%. ▪ Sum of PFAS – ACCSSS0017 (<0.0002 µg/L / QC225 (0.005 µg/L) = 185%. ▪ Sum of PFHxS and PFOS – ACCSSS0017 (<0.0002 µg/L / QC225 (0.004 µg/L) = 181%.

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		▪ Perfluorobutanoic acid (PFBA) – ACCSSS0076 (0.0194 µg/L) / QC216 (0.068 µg/L) = 111%. ▪ Perfluoropentanoic acid (PFPeA) – ACCSSS0076 (0.0222 µg/L) / QC216 (0.082 µg/L) = 115%. ▪ Perfluorohexanoic acid (PFHxA) – ACCSSS0076 (0.055 µg/L) / QC216 (0.13 µg/L) = 81%. ▪ Perfluorohexanoic acid (PFHxA) – ACCSSS0076 (0.055 µg/L) / QC216 (0.13 µg/L) = 81%. ▪ Perfluoroheptanoic acid (PFHpA) – ACCSSS0076 (0.0053 µg/L) / QC216 (0.008 µg/L) = 41%. ▪ Perfluorononanoic acid (PFNA) – ACCSSS0076 (0.0019 µg/L) / QC216 (0.003 µg/L) = 45%. ▪ 10:2 Fluorotelomer sulfonic acid (10:2 FTS) – ACCSSS0076 (0.007 µg/L) / QC216 (0.011 µg/L) = 44%. ▪ Sum of PFHxS and PFOS – ACCSSS0076 (<0.0016 µg/L) / QC216 (0.007 µg/L) = 126%.	
RPD Summary	A total of 82 RPDs were reported above the adopted quality objective of 30% comprising PFAS. The differences between the primary and duplicate samples are considered by using the higher values when comparing against criteria (if applicable). The level of exceedance is generally minor and likely attributed to soil heterogeneity and PFAS analyte concentrations. Due to their limited extent, the RPD exceedances are not considered to affect the interpretative use of the data.		
Standard Procedures	Fieldwork procedures are detailed in the Sampling Plan.		
Qualified Personnel	Staff involved in managing and reviewing the project and those involved in fieldwork are qualified and suitably experienced in the assessment, remediation and management of contaminated sites.		
Completeness of test program	The scope of work undertaken was generally consistent with the scope agreed upon by the Client and set out in the Sampling Plan.		
Validity of Data Set	The data quality review indicated no significant systematic errors in the data collection process and therefore, the data set used as the basis for the investigation is considered valid and complete. Holding time exceedances are not considered critical to the integrity of the sampling program.		

			Perfluorocarbons																													
			2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	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-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 PFHxS and PFOS
			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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.000001	0.0005	0.0005	0.0005	0.0005	0.0002	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0002	0.0002	0.0002
PFAS NEMP 2020 Table 1 Health Drinking Water														0.56																		0.07
PFAS NEMP 2020 Table 1 Health Recreational Water														5.6																		2
PFAS NEMP 2020 Table 5 Freshwater 99%								0.00023						19																		
Site ID	Field ID	Date																														
Rinsate Blanks	QC102	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC107	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC113	21/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.002	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC118	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.003	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC123	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC128	24/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Field Blanks	QC103	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC108	20/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC114	21/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC119	22/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC124	23/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	QC129	24/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
Trip Blanks	TBW738	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW739	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW740	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW741	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW742	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW743	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW744	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW745	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW746	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW747	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002
	TBW748	19/08/2021	<0.000001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002

Lab Report Number		EP2110221			EP2110221	822758		EP2110221			EP2110221	822758		EP2110221	822758	
Sample Code		EP2110221002	EP2110221001		EP2110221002	B21-Se13532		EP2110221011	EP2110221012		EP2110221011	B21-Se13534		EP2110221011	B21-Se13546	
Field ID		SD002	QC104		SD002	QC204		SD011	QC106		SD011	QC206		SD011	QC206	
Matrix Type		soil	soil		soil	soil		soil	soil		soil	soil		soil	soil	
Date	Unit	19/08/2021	19/08/2021	RPD	19/08/2021	19/08/2021	RPD	20/08/2021	20/08/2021	RPD	20/08/2021	20/08/2021	RPD	20/08/2021	20/08/2021	RPD
NA																
Sum of WA DWER PFAS (n=10)*	UG/L	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	**0.009**	**191**
	UG/KG	-	-	-	-	<10	-	-	-	-	-	<10	-	-	-	-
Sum of WA DWER PFAS (n=10)*	mg/kg	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	-	-
Inorganics																
pH of Leaching Fluid	PH UNITS	-	-	-	-	-	-	-	-	-	-	-	-	-	**5.4**	-
pH (Final)	pH Unit	**7.7**	**7.6**	1	**7.7**	-	-	**8.9**	**8.5**	5	**8.9**	-	-	**8.9**	**7.8**	13
pH (Initial)	pH_Units	-	-	-	-	-	-	-	-	-	-	-	-	-	**7.5**	-
Moisture	%	**16.7**	**16.6**	1	**16.7**	-	-	**23.8**	**18.3**	26	**23.8**	-	-	**23.8**	-	-
Perfluorocarbons																
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.000001	<0.000001	0	<0.000001	-	-	<0.000001	<0.000001	0	<0.000001	-	-	<0.000001	<0.000005	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorononanesulfonic acid (PFNS)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-
	mg/kg	-	-	-	-	<0.005	-	-	-	-	-	<0.005	-	-	-	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	**0.002**	**164**
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorobutanoic acid (PFBA)	µg/L	<0.0020	<0.0020	0	<0.0020	-	-	<0.0020	<0.0020	0	<0.0020	-	-	<0.0020	**0.007**	**111**
	mg/kg	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	-	-
Perfluoropentanoic acid (PFPeA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorohexanoic acid (PFHxA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoropropanesulfonic acid (PFPrS)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-
	mg/kg	-	-	-	-	<0.005	-	-	-	-	-	<0.005	-	-	-	-
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctanoate (PFOA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorononanoic acid (PFNA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanoic acid (PFDA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	-	-
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
	mg/kg	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Sum of PFAS	µg/L	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	**0.009**	**191**
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.05	0	<0.0002	<0.0002	0	<0.0002	<0.05	0	<0.0002	-	-
Sum of PFHxS and PFOS	µg/L	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	**0.002**	**164**
	mg/kg	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.002**	-
	mg/kg	-	-	-	-	<0.005	-	-	-	-	-	<0.005	-	-	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.002**	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/kg	-	-	-	-	<0.005	-	-	-	-	-	<0.005	-	-	-	-

*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

Lab Report Number		EP2110221			EP2110221	822758		EP2110221	822758		EP2110221			EP2110221	822758		EP2110221	822758		
Sample Code		EP2110221034	EP2110221053		EP2110221034	B21-Se13536		EP2110221034	B21-Se13548		EP2110221050	EP2110221051		EP2110221050	B21-Se13535		EP2110221050	B21-Se13547		
Field ID		SS015	QC111		SS015	QC211		SS015	QC211		SS057	QC110		SS057	QC210		SS057	QC210		
Matrix Type		soil	soil		soil	soil		soil	soil		soil	soil		soil	soil		soil	soil		
Date		20/08/2021	21/08/2021	RPD	20/08/2021	21/08/2021	RPD	20/08/2021	21/08/2021	RPD	21/08/2021	21/08/2021	RPD	21/08/2021	21/08/2021	RPD	21/08/2021	21/08/2021	RPD
	Unit	LOR																		
NA																				
Sum of WA DWER PFAS (n=10)*	UG/L	0.0002	**16.9**	**10.4**	**48**	**16.9**	-	-	**16.9**	**3.09**	**138**	**0.0040**	**0.0259**	**146**	**0.0040**	-	-	**0.0040**	<0.005	0
	UG/KG		-	-	-	-	**200**	-	-	-	-	-	-	-	-	<10	-	-	-	-
Sum of WA DWER PFAS (n=10)*	mg/kg		**0.331**	**0.244**	30	**0.331**	-	-	**0.331**	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	-	-
Inorganics																				
pH of Leaching Fluid	PH UNITS	0.1	-	-	-	-	-	-	-	**5.4**	-	-	-	-	-	-	-	-	**5.4**	-
pH (Final)	pH Unit	0.1	**8.6**	**8.1**	6	**8.6**	-	-	**8.6**	**8.5**	1	**9.0**	**8.6**	5	**9.0**	-	-	**9.0**	**9.0**	0
pH (Initial)	pH_Units	0.1	-	-	-	-	-	-	-	**8.1**	-	-	-	-	-	-	-	-	**8.6**	-
Moisture	%	0.1	**1.1**	**0.8**	32	**1.1**	-	-	**1.1**	-	-	**3.5**	**5.0**	**35**	**3.5**	-	-	**3.5**	-	-
Perfluorocarbons																				
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	0.000001	<0.000001	<0.000001	0	<0.000001	-	-	<0.000001	<0.000005	0	<0.000001	<0.000001	0	<0.000001	-	-	<0.000001	<0.000005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorononanesulfonic acid (PFNS)	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	<0.001	-
	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	<0.005	-	-	-	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	**0.0008**	**0.0007**	13	**0.0008**	-	-	**0.0008**	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.0005	**0.0006**	<0.0005	18	**0.0006**	-	-	**0.0006**	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.0002	**0.0007**	**0.0008**	13	**0.0007**	-	-	**0.0007**	<0.001	0	**0.0007**	**0.0006**	15	**0.0007**	-	-	**0.0007**	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorobutanoic acid (PFBA)	µg/L	0.002	**0.0157**	<0.0020	**155**	**0.0157**	-	-	**0.0157**	**0.012**	27	<0.0020	<0.0020	0	<0.0020	-	-	<0.0020	<0.005	0
	mg/kg	0.001	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	-	-	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	-	-
Perfluoropentanoic acid (PFPeA)	µg/L	0.0005	**0.0386**	**0.0320**	19	**0.0386**	-	-	**0.0386**	**0.017**	**78**	**0.0005**	**0.0006**	18	**0.0005**	-	-	**0.0005**	<0.001	0
	mg/kg	0.0002	**0.0008**	**0.0006**	29	**0.0008**	<0.005	0	**0.0008**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	**0.136**	**0.129**	5	**0.136**	-	-	**0.136**	**0.076**	**57**	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	**0.0030**	**0.0033**	10	**0.0030**	<0.005	0	**0.0030**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	<0.001	-
	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	<0.005	-	-	-	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	**0.0354**	**0.0518**	**38**	**0.0354**	-	-	**0.0354**	**0.031**	13	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	**0.0008**	**0.0011**	**32**	**0.0008**	<0.005	0	**0.0008**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctanoate (PFOA)	µg/L	0.0005	**0.224**	**0.223**	0	**0.224**	-	-	**0.224**	**0.11**	**68**	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	**0.0048**	**0.0047**	2	**0.0048**	<0.005	0	**0.0048**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorononanoic acid (PFNA)	µg/L	0.0005	**0.0606**	**0.0591**	3	**0.0606**	-	-	**0.0606**	**0.027**	**77**	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	**0.0015**	**0.0015**	0	**0.0015**	<0.005	0	**0.0015**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanoic acid (PFDA)	µg/L	0.0005	**0.0111**	**0.0170**	**42**	**0.0111**	-	-	**0.0111**	**0.005**	**76**	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	**0.0004**	**0.0005**	22	**0.0004**	<0.005	0	**0.0004**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.0005	**0.0009**	**0.0018**	**67**	**0.0009**	-	-	**0.0009**	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorododecanoic acid (PFDoDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorooctane sulfonamide (FOSA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.001	**16.4**	**9.87**	**50**	**16.4**	-	-	**16.4**	**2.8**	**142**	**0.002**	**0.022**	**167**	**0.002**	-	-	**0.002**	<0.005	0
	mg/kg	0.0005	**0.318**	**0.231**	**32**	**0.318**	**0.2**	**46**	**0.318**	-	-	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	-	-
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.001	**0.088**	**0.105**	18	**0.088**	-	-	**0.088**	**0.044**	**67**	<0.001	**0.002**	**67**	<0.001	-	-	<0.001	<0.001	0
	mg/kg	0.0005	**0.0035**	**0.0037**	6	**0.0035**	<0.005	0	**0.0035**	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.001	**0.002**	**0.003**	**40**	**0.002**	-	-	**0.002**	<0.001	**67**	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
	mg/kg	0.0005	**0.0010**	**0.0010**	0	**0.0010**	<0.005	0	**0.0010**	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Sum of PFAS	µg/L	0.0002	**17.0**	**10.5**	**47**	**17.0**	-	-	**17.0**	**3.122**	**138**	**0.0040**	**0.0259**	**146**	**0.0040**	-	-	**0.0040**	<0.005	0
	mg/kg	0.0002	**0.334**	**0.247**	30	**0.334**	**0.2**	**50**	**0.334**	-	-	<0.0002	<0.0002	0	<0.0002	<0.05	0	<0.0002	-	-
Sum of PFHxS and PFOS	µg/L	0.0002	**0.0013**	**0.0008**	**48**	**0.0013**	-	-	**0.0013**	<0.001	26	**0.0007**	**0.0006**	15	**0.0007**	-	-	**0.0007**	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	0.001	-	-	-	-	-	-	-	**0.11**	-	-	-	-	-	-	-	-	<0.001	-
	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	<0.005	-	-	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	0.001	-	-	-	-	-	-	-	**0.11**	-	-	-	-	-	-	-	-	<0.001	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	<0.005	-	-	-	-

*RPDs have only been considered where a concentration is greater than
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptab
***Interlab Duplicates are matched on a per compound basis as methods

Lab Report Number		EP2110221			EP2110221	822758		EP2110221	822758		EP2110221			EP2110221	822758		EP2110221	822758	
Sample Code		EP2110221058	EP2110221071		EP2110221058	B21-Se13538		EP2110221058	B21-Se13550		EP2110221064	EP2110221072		EP2110221064	B21-Se13539		EP2110221064	B21-Se13551	
Field ID		SS070	QC115		SS070	QC215		SS070	QC215		SS076	QC116		SS076	QC216		SS076	QC216	
Matrix Type		soil	soil		soil	soil		soil	soil		soil	soil		soil	soil		soil	soil	
Date		21/08/2021	21/08/2021	RPD	21/08/2021	22/08/2021	RPD	21/08/2021	22/08/2021	RPD	21/08/2021	21/08/2021	RPD	21/08/2021	22/08/2021	RPD	21/08/2021	22/08/2021	RPD
	Unit	LOR																	
NA																			
Sum of WA DWER PFAS (n=10)*	UG/L	0.0002	**51.0**	**50.2**	2	**51.0**	-	-	**51.0**	**7.05**	**151**	**2.90**	**5.16**	**56**	**2.90**	-	-	**2.90**	**4.095**	**34**
	UG/KG		-	-	-	-	**725.9**	-	-	-	-	-	-	-	-	**225**	-	-	-	-
Sum of WA DWER PFAS (n=10)*	mg/kg		**1.07**	**1.36**	24	**1.07**	-	-	**1.07**	-	-	**0.138**	**0.142**	3	**0.138**	-	-	**0.138**	-	-
Inorganics																				
pH of Leaching Fluid	PH UNITS	0.1	-	-	-	-	-	-	-	**5.4**	-	-	-	-	-	-	-	-	**5.4**	-
pH (Final)	pH Unit	0.1	**8.1**	**9.0**	11	**8.1**	-	-	**8.1**	**9.9**	20	**8.5**	**9.1**	7	**8.5**	-	-	**8.5**	**9.2**	8
pH (Initial)	pH_Units	0.1	-	-	-	-	-	-	-	**8.6**	-	-	-	-	-	-	-	-	**9.1**	-
Moisture	%	0.1	**1.2**	**0.8**	40	**1.2**	-	-	**1.2**	-	-	**1.8**	**1.4**	25	**1.8**	-	-	**1.8**	-	-
Perfluorocarbons																				
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	0.000001	<0.000001	<0.000001	0	<0.000001	-	-	<0.000001	<0.000005	0	<0.000004	<0.000001	0	<0.000004	-	-	<0.000004	<0.000005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorononanesulfonic acid (PFNS)	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	<0.001	-
	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	<0.005	-	-	-	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.0005	**0.0006**	<0.0005	18	**0.0006**	-	-	**0.0006**	<0.001	0	<0.0016	**0.0032**	**67**	<0.0016	-	-	<0.0016	**0.003**	**61**
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.0002	**0.0004**	<0.0002	**67**	**0.0004**	-	-	**0.0004**	**0.001**	**86**	<0.0016	**0.0026**	**48**	<0.0016	-	-	<0.0016	**0.004**	**86**
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorobutanoic acid (PFBA)	µg/L	0.002	**0.0653**	**0.0501**	26	**0.0653**	-	-	**0.0653**	**0.11**	**51**	**0.0194**	**0.0234**	19	**0.0194**	-	-	**0.0194**	**0.068**	**111**
	mg/kg	0.001	**0.002**	**0.002**	0	**0.002**	<0.005	0	**0.002**	-	-	<0.001	**0.001**	0	<0.001	<0.005	0	<0.001	-	-
Perfluoropentanoic acid (PFPeA)	µg/L	0.0005	**0.0508**	**0.0314**	**47**	**0.0508**	-	-	**0.0508**	**0.043**	17	**0.0222**	**0.0230**	4	**0.0222**	-	-	**0.0222**	**0.082**	**115**
	mg/kg	0.0002	**0.0008**	**0.0014**	**55**	**0.0008**	<0.005	0	**0.0008**	-	-	**0.0009**	**0.0013**	36	**0.0009**	<0.005	0	**0.0009**	-	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	**0.400**	**0.238**	**51**	**0.400**	-	-	**0.400**	**0.20**	**67**	**0.0550**	**0.0421**	27	**0.0550**	-	-	**0.0550**	**0.13**	**81**
	mg/kg	0.0002	**0.0048**	**0.0063**	27	**0.0048**	<0.005	0	**0.0048**	-	-	**0.0010**	**0.0016**	**46**	**0.0010**	<0.005	0	**0.0010**	-	-
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	<0.001	-
	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	<0.005	-	-	-	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	**0.0501**	**0.0248**	**68**	**0.0501**	-	-	**0.0501**	**0.026**	**63**	**0.0053**	**0.0035**	**41**	**0.0053**	-	-	**0.0053**	**0.008**	**41**
	mg/kg	0.0002	**0.0007**	**0.0005**	33	**0.0007**	<0.005	0	**0.0007**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctanoate (PFOA)	µg/L	0.0005	**0.236**	**0.170**	**33**	**0.236**	-	-	**0.236**	**0.17**	**33**	**0.0219**	**0.0197**	11	**0.0219**	-	-	**0.0219**	**0.030**	31
	mg/kg	0.0002	**0.0032**	**0.0050**	44	**0.0032**	**0.0059**	**59**	**0.0032**	-	-	**0.0006**	**0.0006**	0	**0.0006**	<0.005	0	**0.0006**	-	-
Perfluorononanoic acid (PFNA)	µg/L	0.0005	**0.0147**	**0.0095**	**43**	**0.0147**	-	-	**0.0147**	**0.011**	29	**0.0019**	**0.0024**	23	**0.0019**	-	-	**0.0019**	**0.003**	**45**
	mg/kg	0.0002	**0.0003**	**0.0004**	29	**0.0003**	<0.005	0	**0.0003**	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanoic acid (PFDA)	µg/L	0.0005	**0.0541**	**0.0296**	**59**	**0.0541**	-	-	**0.0541**	**0.042**	25	**0.0101**	**0.0087**	15	**0.0101**	-	-	**0.0101**	**0.014**	32
	mg/kg	0.0002	**0.0018**	**0.0021**	15	**0.0018**	<0.005	0	**0.0018**	-	-	**0.0004**	**0.0004**	0	**0.0004**	<0.005	0	**0.0004**	-	-
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.0005	**0.0007**	<0.0005	33	**0.0007**	-	-	**0.0007**	<0.001	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorododecanoic acid (PFDoDA)	µg/L	0.0005	**0.0012**	**0.0005**	**82**	**0.0012**	-	-	**0.0012**	<0.001	18	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.001	0
	mg/kg	0.0002	**0.0008**	**0.0011**	32	**0.0008**	<0.005	0	**0.0008**	-	-	**0.0002**	<0.0002	0	**0.0002**	<0.005	0	**0.0002**	-	-
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0	<0.0040	<0.0005	0	<0.0040	-	-	<0.0040	<0.001	0
	mg/kg	0.0005	<0.0005	**0.0007**	33	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorooctane sulfonamide (FOSA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0	<0.004	<0.001	0	<0.004	-	-	<0.004	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0	<0.004	<0.001	0	<0.004	-	-	<0.004	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0	<0.004	<0.001	0	<0.004	-	-	<0.004	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0	<0.0016	<0.0005	0	<0.0016	-	-	<0.0016	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.001	**0.005**	**0.004**	22	**0.005**	-	-	**0.005**	**0.003**	50	<0.002	<0.001	0	<0.002	-	-	<0.002	**0.002**	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.001	**48.0**	**48.2**	0	**48.0**	-	-	**48.0**	**4.5**	**166**	**2.36**	**4.71**	**66**	**2.36**	-	-	**2.36**	**3.2**	30
	mg/kg	0.0005	**0.969**	**1.22**	23	**0.969**	**0.58**	**50**	**0.969**	-	-	**0.113**	**0.117**	3	**0.113**	**0.2**	**56**	**0.113**	-	-
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.001	**2.21**	**1.46**	**41**	**2.21**	-	-	**2.21**	**2.0**	10	**0.418**	**0.334**	22	**0.418**	-	-	**0.418**	**0.57**	31
	mg/kg	0.0005	**0.0894**	**0.125**	33	**0.0894**	**0.14**	**44**	**0.0894**	-	-	**0.0220**	**0.0209**	5	**0.0220**	**0.025**	13	**0.0220**	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.001	**0.023**	**0.005**	**129**	**0.023**	-	-	**0.023**	**0.046**	**67**	**0.007**	**0.003**	**80**	**0.007**	-	-	**0.007**	**0.011**	**44**
	mg/kg	0.0005	**0.0288**	**0.0540**	**61**	**0.0288**	**0.071**	**85**	**0.0288**	-	-	**0.0105**	**0.0094**	11	**0.0105**	**0.012**	13	**0.0105**	-	-
Sum of PFAS	µg/L	0.0002	**51.1**	**50.2**	2	**51.1**	-	-	**51.1**	**7.152**	**151**	**2.92**	**5.18**	**56**	**2.92**	-	-	**2.92**	**4.125**	34
	mg/kg	0.0002	**1.10**	**1.42**	25	**1.10**	**0.7969**	32	**1.10**	-	-	**0.149**	**0.152**	2	**0.149**	**0.237**	**46**	**0.149**	-	-
Sum of PFHxS and PFOS	µg/L	0.0002	**0.0010**	<0.0002	**133**	**0.0010**	-	-	**0.0010**	**0.001**	0	<0.0016	**0.0058**	**114**	<0.0016	-	-	<0.0016	**0.007**	**126**
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	0.001	-	-	-	-	-	-	-	**0.171**	-	-	-	-	-	-	-	-	**0.034**	-
	mg/kg	0.005	-	-	-	-	**0.0059**	-	-	-	-	-	-	-	-	<0.005	-	-	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	0.001	-	-	-	-	-	-	-	**0.171**	-	-	-	-	-	-	-	-	**0.037**	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/kg	0.005	-	-	-	-	**0.0059**	-	-	-	-	-	-	-	-	<0.005	-	-	-	-

*RPDs have only been considered where a concentration is greater than
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptab
***Interlab Duplicates are matched on a per compound basis as methods

Lab Report Number		**EP2110231**				**EP2110231**	**822758**			**EP2110231**	**822758**			**EP2110231**				**EP2110231**	**822758**			**EP2110231**	**822758**	
Sample Code		**EP2110231003**	**EP2110231001**			**EP2110231003**	**B21-Se13540**			**EP2110231003**	**B21-Se13552**			**EP2110231034**	**EP2110231045**			**EP2110231034**	**B21-Se13541**			**EP2110231034**	**B21-Se13553**	
Field ID		**SS112**	**QC117**			**SS112**	**QC217**			**SS112**	**QC217**			**SS017**	**QC125**			**SS017**	**QC225**			**SS017**	**QC225**	
Matrix Type		**soil**	**soil**			**soil**	**soil**			**soil**	**soil**			**soil**	**soil**			**soil**	**soil**			**soil**	**soil**	
Date		**22/08/2021**	**22/08/2021**	**RPD**		**22/08/2021**	**22/08/2021**	**RPD**		**22/08/2021**	**22/08/2021**	**RPD**		**23/08/2021**	**23/08/2021**	**RPD**		**23/08/2021**	**24/08/2021**	**RPD**		**23/08/2021**	**24/08/2021**	**RPD**
	Unit	LOR																						
NA																								
Sum of WA DWER PFAS (n=10)*	**UG/L**	0.0002	<0.0002	**0.0002**	0	<0.0002	-	-		<0.0002	<0.005	0		<0.0002	**0.0008**	**120**		<0.0002	-	-		<0.0002	**0.005**	185
	UG/KG		-	-	-	-	<10	-		-	-	-		-	-	-		-	<10	-		-	-	-
Sum of WA DWER PFAS (n=10)*	**mg/kg**		<0.0002	<0.0002	0	<0.0002	-	-		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	-	-		<0.0002	-	-
Inorganics																								
pH of Leaching Fluid	**PH UNITS**	0.1	-	-	-	-	-	-		-	**5.4**	-		-	-	-		-	-	-		-	**5.7**	-
pH (Final)	**pH Unit**	0.1	**6.5**	**6.3**	3	**6.5**	-	-		**6.5**	**6.1**	6		**7.5**	**6.7**	11		**7.5**	-	-		**7.5**	**7.7**	3
pH (Initial)	**pH_Units**	0.1	-	-	-	-	-	-		-	**6.4**	-		-	-	-		-	-	-		-	**7.8**	-
Moisture	**%**	0.1	**9.7**	**10.6**	9	**9.7**	-	-		**9.7**	-	-		**12.6**	**13**	3		**12.6**	-	-		**12.6**	-	-
Perfluorocarbons																								
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	**mg/L**	0.000001	<0.000001	<0.000001	0	<0.000001	-	-		<0.000001	<0.000005	0		<0.000001	<0.000001	0		<0.000001	-	-		<0.000001	<0.000005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
Perfluorononanesulfonic acid (PFNS)	**µg/L**	0.001	-	-	-	-	-	-		-	<0.001	-		-	-	-		-	-	-		-	<0.001	-
	mg/kg	0.005	-	-	-	-	<0.005	-		-	-	-		-	-	-		-	<0.005	-		-	-	-
Perfluorobutane sulfonic acid (PFBS)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluoropentane sulfonic acid (PFPeS)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorohexane sulfonic acid (PFHxS)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluoroheptane sulfonic acid (PFHpS)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorooctane sulfonic acid (PFOS)	**µg/L**	0.0002	<0.0002	**0.0002**	0	<0.0002	-	-		<0.0002	<0.001	0		<0.0002	**0.0002**	0		<0.0002	-	-		<0.0002	**0.004**	**181**
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorodecanesulfonic acid (PFDS)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorobutanoic acid (PFBA)	**µg/L**	0.002	<0.002	<0.002	0	<0.002	-	-		<0.002	<0.005	0		<0.002	<0.002	0		<0.002	-	-		<0.002	<0.005	0
	mg/kg	0.001	<0.001	<0.001	0	<0.001	<0.005	0		<0.001	-	-		<0.001	<0.001	0		<0.001	<0.005	0		<0.001	-	-
Perfluoropentanoic acid (PFPeA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	**0.0006**	18		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorohexanoic acid (PFHxA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	**0.001**	**67**
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluoropropanesulfonic acid (PFPrS)	**µg/L**	0.001	-	-	-	-	-	-		-	<0.001	-		-	-	-		-	-	-		-	<0.001	-
	mg/kg	0.005	-	-	-	-	<0.005	-		-	-	-		-	-	-		-	<0.005	-		-	-	-
Perfluoroheptanoic acid (PFHpA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorooctanoate (PFOA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorononanoic acid (PFNA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorodecanoic acid (PFDA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluoroundecanoic acid (PFUnDA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorododecanoic acid (PFDoDA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorotridecanoic acid (PFTrDA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Perfluorotetradecanoic acid (PFTeDA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.001	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.001	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
Perfluorooctane sulfonamide (FOSA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.005	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)	**µg/L**	0.001	<0.001	<0.001	0	<0.001	-	-		<0.001	<0.005	0		<0.001	<0.001	0		<0.001	-	-		<0.001	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	**µg/L**	0.001	<0.001	<0.001	0	<0.001	-	-		<0.001	<0.005	0		<0.001	<0.001	0		<0.001	-	-		<0.001	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	**µg/L**	0.001	<0.001	<0.001	0	<0.001	-	-		<0.001	<0.005	0		<0.001	<0.001	0		<0.001	-	-		<0.001	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.005	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.01	0		<0.0002	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	**µg/L**	0.0005	<0.0005	<0.0005	0	<0.0005	-	-		<0.0005	<0.005	0		<0.0005	<0.0005	0		<0.0005	-	-		<0.0005	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.01	0		<0.0002	-	-
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	**µg/L**	0.001	<0.001	<0.001	0	<0.001	-	-		<0.001	<0.001	0		<0.001	<0.001	0		<0.001	-	-		<0.001	<0.001	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
6:2 Fluorotelomer Sulfonate (6:2 FtS)	**µg/L**	0.001	<0.001	<0.001	0	<0.001	-	-		<0.001	<0.005	0		<0.001	<0.001	0		<0.001	-	-		<0.001	<0.005	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.01	0		<0.0005	-	-
8:2 Fluorotelomer sulfonate (8:2 FtS)	**µg/L**	0.001	<0.001	<0.001	0	<0.001	-	-		<0.001	<0.001	0		<0.001	<0.001	0		<0.001	-	-		<0.001	<0.001	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	**µg/L**	0.001	<0.001	<0.001	0	<0.001	-	-		<0.001	<0.001	0		<0.001	<0.001	0		<0.001	-	-		<0.001	<0.001	0
	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		<0.0005	-	-		<0.0005	<0.0005	0		<0.0005	<0.005	0		<0.0005	-	-
Sum of PFAS	**µg/L**	0.0002	<0.0002	**0.0002**	0	<0.0002	-	-		<0.0002	<0.005	0		<0.0002	**0.0008**	**120**		<0.0002	-	-		<0.0002	**0.005**	**185**
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.05	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.05	0		<0.0002	-	-
Sum of PFHxS and PFOS	**µg/L**	0.0002	<0.0002	**0.0002**	0	<0.0002	-	-		<0.0002	<0.001	0		<0.0002	**0.0002**	0		<0.0002	-	-		<0.0002	**0.004**	**181**
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		<0.0002	-	-		<0.0002	<0.0002	0		<0.0002	<0.005	0		<0.0002	-	-
Sum of US EPA PFAS (PFOS + PFOA)*	**µg/L**	0.001	-	-	-	-	-	-		-	<0.001	-		-	-	-		-	-	-		-	**0.004**	-
	mg/kg	0.005	-	-	-	-	<0.005	-		-	-	-		-	-	-		-	<0.005	-		-	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	**µg/L**	0.001	-	-	-	-	-	-		-	<0.001	-		-	-	-		-	-	-		-	**0.004**	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	**mg/kg**	0.005	-	-	-	-	<0.005	-		-	-	-		-	-	-		-	<0.005	-		-	-	-

*RPDs have only been considered where a concentration is greater than
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptab
***Interlab Duplicates are matched on a per compound basis as methods

	Lab Report Number		EP2110231			EP2110231	822758		EP2110231	822758	
	Sample Code		EP2110231043	EP2110231052		EP2110231043	B21-Se13542		EP2110231043	B21-Se13554	
	Field ID		SS026	QC126		SS026	QC226		SS026	QC226	
	Matrix Type		soil	soil		soil	soil		soil	soil	
	Date		23/08/2021	23/08/2021	RPD	23/08/2021	24/08/2021	RPD	23/08/2021	24/08/2021	RPD
	Unit	LOR									
NA											
Sum of WA DWER PFAS (n=10)*	UG/L	0.0002	**0.0008**	**0.0008**	0	**0.0008**	-	-	**0.0008**	<0.005	0
	UG/KG		-	-	-	-	<10	-	-	-	-
Sum of WA DWER PFAS (n=10)*	mg/kg		<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	-	-
Inorganics											
pH of Leaching Fluid	PH UNITS	0.1	-	-	-	-	-	-	-	**5.7**	-
pH (Final)	pH Unit	0.1	**6**	**7.5**	22	**6**	-	-	**6**	**7.1**	17
pH (Initial)	pH_Units	0.1	-	-	-	-	-	-	-	**7.6**	-
Moisture	%	0.1	**15.5**	**14.3**	8	**15.5**	-	-	**15.5**	-	-
Perfluorocarbons											
2-(N-methylperfluoro-1-octane	mg/L	0.000001	<0.000001	<0.000001	0	<0.000001	-	-	<0.000001	<0.000005	0
sulfonamido)-ethanol (N-MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorononanesulfonic acid	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-
(PFNS)	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-
Perfluorobutane sulfonic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFBS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoropentane sulfonic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFPeS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorohexane sulfonic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFHxS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoroheptane sulfonic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFHpS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctane sulfonic acid	µg/L	0.0002	**0.0002**	**0.0002**	0	**0.0002**	-	-	**0.0002**	<0.001	0
(PFOS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanesulfonic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFDS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorobutanoic acid (PFBA)	µg/L	0.002	<0.002	<0.002	0	<0.002	-	-	<0.002	<0.005	0
	mg/kg	0.001	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	-	-
Perfluoropentanoic acid (PFPeA)	µg/L	0.0005	**0.0006**	**0.0006**	0	**0.0006**	-	-	**0.0006**	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoropropanesulfonic acid	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-
(PFPrS)	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorooctanoate (PFOA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorononanoic acid (PFNA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorodecanoic acid (PFDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluoroundecanoic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorododecanoic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Perfluorotetradecanoic acid	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.001	0
(PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Perfluorooctane sulfonamide	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
(FOSA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
N-Methyl perfluorooctane	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Ethyl perfluorooctane	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
N-Methyl perfluorooctane	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
N-Ethyl perfluorooctane	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	-	-	<0.0005	<0.005	0
sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.01	0	<0.0002	-	-
4:2 Fluorotelomer sulfonic acid (4:2	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
6:2 Fluorotelomer Sulfonate (6:2	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.005	0
FtS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	-	-
8:2 Fluorotelomer sulfonate (8:2	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
FtS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
10:2 Fluorotelomer sulfonic acid	µg/L	0.001	<0.001	<0.001	0	<0.001	-	-	<0.001	<0.001	0
(10:2 FTS)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	-	-
Sum of PFAS	µg/L	0.0002	**0.0008**	**0.0008**	0	**0.0008**	-	-	**0.0008**	<0.005	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.05	0	<0.0002	-	-
Sum of PFHxS and PFOS	µg/L	0.0002	**0.0002**	**0.0002**	0	**0.0002**	-	-	**0.0002**	<0.001	0
	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	-	-
Sum of US EPA PFAS (PFOS +	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-
PFOA)*	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-
Sum of enHealth PFAS (PFHxS +	µg/L	0.001	-	-	-	-	-	-	-	<0.001	-
PFOS + PFOA)*											
Sum of enHealth PFAS (PFHxS +	mg/kg	0.005	-	-	-	-	<0.005	-	-	-	-
PFOS + PFOA)*											

*RPDs have only been considered where a concentration is greater than
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptab
***Interlab Duplicates are matched on a per compound basis as method

Lab Report Number		EP2109734			EP2109734	822758		EP2109734			EP2109734	822758		EP2109734		
Sample Code		EP2109734002	EP2109734001		EP2109734002	B21-Se13527		EP2109734012	EP2109734013		EP2109734012	B21-Se13528		EP2109734030	EP2109734053	
Field ID		ACCSSW0003	QC101		ACCSSW0003	QC201		ACCSSW0012	QC105		ACCSSW0012	QC205		HGA0065P	QC120	
Matrix Type		water	water		water	water		water	water		water	water		water	water	
Date		19/08/2021	19/08/2021	RPD	19/08/2021		RPD	20/08/2021	20/08/2021	RPD	20/08/2021		RPD	22/08/2021	22/08/2021	RPD
	Unit	EQL														
NA																
Sum of WA DWER PFAS (n=10)*	UG/L	0.005	-	-	-	-	<0.005	-	-	-	-	-	<0.005	-	-	-	-
Silica (Total Dissolved) by IC																
Silicon as SiO2	mg/L	0.1	30.4	25.9	16	30.4	-	-	27.4	27.2	1	27.4	-	-	31.5	31.7	1
Metals																	
Calcium (filtered)	mg/L	1	44	43	2	44	-	-	48	46	4	48	-	-	50	54	8
Magnesium (filtered)	mg/L	1	34	33	3	34	-	-	34	33	3	34	-	-	33	37	11
Potassium (filtered)	mg/L	1	10	10	0	10	-	-	10	10	0	10	-	-	10	10	0
Sodium (filtered)	mg/L	1	36	35	3	36	-	-	36	35	3	36	-	-	34	34	0
Inorganics																	
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	188	188	0	188	-	-	184	196	6	184	-	-	224	210	6
Carbonate Alkalinity (as CaCO3)	MG/L	1	12	6	67	12	-	-	5	5	0	5	-	-	<1	<1	0
Total Dissolved Solids (Calc.)	mg/L	10	408	412	1	408	-	-	411	413	0	411	-	-	424	425	0
Alkalinity (Hydroxide) as CaCO3	mg/L	1	<1	<1	0	<1	-	-	<1	<1	0	<1	-	-	<1	<1	0
Alkalinity (total) as CaCO3	mg/L	1	200	194	3	200	-	-	188	201	7	188	-	-	224	210	6
Anions Total	meq/L	0.01	6.44	6.29	2	6.44	-	-	6.10	6.41	5	6.10	-	-	7.18	6.40	11
Cations Total	meq/L	0.01	6.82	6.64	3	6.82	-	-	7.02	6.79	3	7.02	-	-	6.94	7.47	7
Chloride	mg/L	1	54	53	2	54	-	-	52	51	2	52	-	-	50	47	6
Electrical conductivity *(lab)	µS/cm	1	627	634	1	627	-	-	632	635	0	632	-	-	652	654	0
Fluoride	mg/L	0.1	0.3	0.3	0	0.3	-	-	0.3	0.3	0	0.3	-	-	0.3	0.2	40
Ionic Balance	%	0.01	2.87	2.73	5	2.87	-	-	7.00	2.86	84	7.00	-	-	1.64	7.78	130
pH (Lab)	pH_Units	0.01	8.44	8.36	1	8.44	-	-	8.34	8.34	0	8.34	-	-	8.07	8.09	0
Sodium Absorption Ratio (filtered)	-		0.99	0.98	1	0.99	-	-	0.97	0.96	1	0.97	-	-	0.92	0.87	6
Hardness as CaCO3 (filtered)	mg/L	1	250	243	3	250	-	-	260	251	4	260	-	-	261	287	9
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	1	44	44	0	44	-	-	42	46	9	42	-	-	62	42	38
Perfluorocarbons																	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	0.000001	<0.000001	<0.000001	0	<0.000001	<0.00005	0	<0.000001	<0.000001	0	<0.000001	<0.00005	0	<0.000001	<0.000001	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.001	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0
Perfluorobutanoic acid (PFBA)	µg/L	0.002	<0.0020	<0.0020	0	<0.0020	<0.05	0	<0.0020	<0.0020	0	<0.0020	<0.05	0	<0.0020	<0.0020	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.001	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluorooctanoate (PFOA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluorononanoic acid (PFNA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	**0.0007**	<0.0005	**33**	**0.0007**	<0.01	0	<0.0005	<0.0005	0
Perfluorodecanoic acid (PFDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.001	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.001	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.001	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.0005	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.001	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	<0.001	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
Sum of PFAS	µg/L	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0	**0.0007**	<0.0002	111	**0.0007**	<0.005	0	<0.0002	<0.0002	0
Sum of PFAS (WA DER List)	µg/L	0.0002	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0
Sum of PFHxS and PFOS	µg/L	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0	<0.0002	<0.0002	0	<0.0002	<0.001	0	<0.0002	<0.0002	0
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	0.001	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	0.001	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-

*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 (10 - 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

		EP2109734	822758		EP2109734			EP2109734	822758		EP2109734			EP2109734	822758	
		EP2109734030	B21-Se13529		EP2109734043	EP2109734054		EP2109734043	B21-Se13530		EP2109734048	EP2109734055		EP2109734048	B21-Se13531	
		HGA0065P	QC220		HGC0233	QC121		HGC0233	QC221		HGE0192	QC122		HGE0192	QC222	
		water	water		water	water		water	water		water	water		water	water	
		22/08/2021		RPD	22/08/2021	22/08/2021	RPD	22/08/2021		RPD	22/08/2021	22/08/2021	RPD	22/08/2021		RPD
	Unit															
NA																
Sum of WA DWER PFAS (n=10)*	UG/L	-	<0.005	-	-	-	-	-	<0.005	-	-	-	-	-	<0.005	-
Silica (Total Dissolved) by IC																
Silicon as SiO2	mg/L	31.5	-	-	26.8	27.6	3	26.8	-	-	23.1	27.6	18	23.1	-	-
Metals																
Calcium (filtered)	mg/L	50	-	-	43	43	0	43	-	-	51	54	6	51	-	-
Magnesium (filtered)	mg/L	33	-	-	30	32	6	30	-	-	35	37	6	35	-	-
Potassium (filtered)	mg/L	10	-	-	5	6	18	5	-	-	10	11	10	10	-	-
Sodium (filtered)	mg/L	34	-	-	41	41	0	41	-	-	33	34	3	33	-	-
Inorganics																
Alkalinity (Bicarbonate as CaCO3)	mg/L	224	-	-	196	193	2	196	-	-	193	198	3	193	-	-
Carbonate Alkalinity (as CaCO3)	MG/L	<1	-	-	<1	<1	0	<1	-	-	<1	<1	0	<1	-	-
Total Dissolved Solids (Calc.)	mg/L	424	-	-	409	409	0	409	-	-	437	430	2	437	-	-
Alkalinity (Hydroxide) as CaCO3	mg/L	<1	-	-	<1	<1	0	<1	-	-	<1	<1	0	<1	-	-
Alkalinity (total) as CaCO3	mg/L	224	-	-	196	193	2	196	-	-	193	198	3	193	-	-
Anions Total	meq/L	7.18	-	-	6.43	6.30	2	6.43	-	-	6.21	6.32	2	6.21	-	-
Cations Total	meq/L	6.94	-	-	6.53	6.72	3	6.53	-	-	7.12	7.50	5	7.12	-	-
Chloride	mg/L	50	-	-	64	63	2	64	-	-	48	47	2	48	-	-
Electrical conductivity *(lab)	µS/cm	652	-	-	629	629	0	629	-	-	672	662	1	672	-	-
Fluoride	mg/L	0.3	-	-	0.3	0.3	0	0.3	-	-	0.3	0.3	0	0.3	-	-
Ionic Balance	%	1.64	-	-	0.75	3.20	124	0.75	-	-	6.81	8.52	22	6.81	-	-
pH (Lab)	pH_Units	8.07	-	-	8.17	8.15	0	8.17	-	-	8.02	7.99	0	8.02	-	-
Sodium Absorption Ratio (filtered)	-	0.92	-	-	1.17	1.15	2	1.17	-	-	0.87	0.87	0	0.87	-	-
Hardness as CaCO3 (filtered)	mg/L	261	-	-	231	239	3	231	-	-	271	287	6	271	-	-
Sulfate as SO4 - Turbidimetric (filtered)	mg/L	62	-	-	34	32	6	34	-	-	48	50	4	48	-	-
Perfluorocarbons																
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	mg/L	<0.000001	<0.00005	0	<0.000001	<0.000001	0	<0.000001	<0.00005	0	<0.000001	<0.000001	0	<0.000001	<0.00005	0
Perfluorononanesulfonic acid (PFNS)	µg/L	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	<0.0001	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.0020	<0.05	0	<0.0020	<0.0020	0	<0.0020	<0.05	0	<0.0020	<0.0020	0	<0.0020	<0.05	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorooctanoate (PFOA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0	<0.0005	<0.0005	0	<0.0005	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0	<0.001	<0.001	0	<0.001	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0	<0.0005	<0.0005	0	<0.0005	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.001	<0.005	0	<0.001	<0.001	0	<0.001	<0.005	0	<0.001	<0.001	0	<0.001	<0.005	0
8:2 Fluorotelomer sulfonate (8:2 FtS)	µg/L	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
Sum of PFAS	µg/L	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0	<0.0002	<0.0002	0	<0.0002	<0.005	0
Sum of PFAS (WA DER List)	µg/L	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-	<0.0002	<0.0002	0	<0.0002	-	-
Sum of PFHxS and PFOS	µg/L	<0.0002	<0.001	0	<0.0002	<0.0002	0	<0.0002	<0.001	0	<0.0002	<0.0002	0	<0.0002	<0.001	0
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	-	<0.001	-	-	-	-	-	<0.001	-	-	-	-	-	<0.001	-

*RPDs have only been considered where a concentratic
**Elevated RPDs are highlighted as per QAQC Profile s
***Interlab Duplicates are matched on a per compound

APPENDIX

J

SURFACE SOIL GEOLOGY

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AoPC	Sample ID	Description
Coondawanna Airport	ACCSSS0001	Red / brown, clayey gravel, gravel fine to coarse, dry
	ACCSSS0002	Red / brown, clayey gravel, gravel fine to coarse, dry
	ACCSSS0003	Red / brown, clayey gravel, gravel fine to coarse, dry
	ACCSSS0004	Red / brown, clayey gravel, gravel fine to coarse, dry
	ACCSSS0005	Red / brown, clayey gravel, gravel fine to coarse, dry
	ACCSSS0006	Red / brown clayey silt, dry
	ACCSSS0007	Red / brown, silty clay, dry
	ACCSSS0008	Red / brown, clayey gravel, gravel fine to coarse, dry
	ACCSSS0009	Red / brown, clayey silt, dry
	ACCSSS0010	Red / brown, silty gravelly clay, gravel fine to coarse, dry
	ACCSSS0011	Red / brown, clayey silt, dry
	ACCSSS0012	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0013	Red / brown, silty clay, dry
	ACCSSS0014	Red / brown, gravelly silt, gravel fine to coarse, dry
	ACCSSS0015	Red / brown, silty gravelly clay, gravel fine to coarse, dry
	ACCSSS0016	Red / brown clay, gravelly clay, some black gravel, dry
	ACCSSS0017	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0018	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0019	Dark brown silt, moist
	ACCSSS0020	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0021	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0022	Red / brown, gravely clay, gravel fine to coarse, wet
	ACCSSS0023	Red / brown, gravely clay, gravel fine to coarse, wet
	ACCSSS0024	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0025	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0026	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0027	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0028	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0029	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0030	Red / brown gravelly clay, gravel fine to coarse, slightly, wet
	ACCSSS0031	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0032	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0033	Red / brown, gravelly clay, gravel fine to coarse, wet
Mulla Mulla Village WWTP and Irrigation Area	ACCSSS0034	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0035	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0036	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0037	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0038	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0039	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0040	Red / brown, gravelly clay, fine clay particles with larger gravel, dry
	ACCSSS0041	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0042	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0043	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0048	Red / brown, gravelly silt, gravel fine to coarse, dry
	ACCSSS0049	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0050	Red / brown, gravelly silt, gravel fine to coarse, hard clay under silt, dry
	ACCSSS0051	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0052	Red / brown, gravelly silty clay, gravel fine to coarse, dry
	ACCSSS0053	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0054	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0055	Red / brown, gravelly silty clay, gravel fine to coarse, some ash present, dry
	ACCSSS0056	Red / brown, silty clay slight small gravel, dry
	ACCSSS0057	Brown, gravelly silt, wet
	ACCSSS0058	Red / dark brown, gravelly silty clay, gravel fine to coarse, wet
	ACCSSS0059	Red / dark brown, silty clay, wet
	ACCSSS0060	Red / dark brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0061	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0062	Red / brown, gravelly silt, gravel fine to coarse, dry
	ACCSSS0063	Red / brown, gravelly silt, gravel fine to coarse, dry
	ACCSSS0064	Red / brown, gravelly silt, gravel fine to coarse, dry
	ACCSSS0065	Red brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0066	Red / brown, gravelly silty clay, dry
	ACCSSS0067	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0068	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0069	Red / brown, gravelly clay, gravel fine to coarse, wet
	ACCSSS0070	Red / brown, gravelly clay, gravel fine to coarse, dry
Heavy Vehicle Workshop	ACCSSS0071	Red / brown, silty clay, fine grained, dry
	ACCSSS0072	Red / brown, silty clay, fine grained, dry
	ACCSSS0073	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0074	Red / brown, silty gravelly clay, gravel is fine, dry
	ACCSSS0075	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0076	Red / brown, silty gravelly clay, gravel is fine, dry
	ACCSSS0077	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0078	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0079	Red / brown, silty gravelly clay, gravel is fine, dry
	ACCSSS0080	Red / brown, gravelly clay, gravel fine to coarse, dry
	ACCSSS0081	Red / brown, silt, dry
	ACCSSS0082	Red / dark brown gravelly clayey silt, gravel is fine to coarse, wet
New and Old Washdown Bays and Evaporation Ponds	ACCSSS0083	Red / brown, clayey silt, dry
	ACCSSS0084	Red / brown, clayey silt, dry
	ACCSSS0085	Red / brown, gravelly clayey silt, gravel is fine to coarse, dry
	ACCSSS0086	Red / brown, clayey silt, dry
	ACCSSS0099	Brown, silt, dry, vegetation
	ACCSSS0100	Red / brown, gravelly silt, gravel fine to coarse, dry
	ACCSSS0101	Red / brown, gravelly silt, gravel fine to coarse, dry
	ACCSSS0102	Red / brown, gravelly silt, gravel fine to coarse, dry
Core Shed BioMax Facility	ACCSSS0111	Red / brown, gravelly clayey silt, gravel fine to coarse, dry
	ACCSSS0112	Red / brown, gravelly silty clay, gravel fine to coarse, dry
	ACCSSS0113	Red / brown, gravelly silty clay, gravel fine, dry
	ACCSSS0114	Red / brown, gravelly silty clay, gravel fine, dry
Workshop BioMax Facility	ACCSSS0115	Red / brown, silty gravel, gravel fine to coarse, dry
	ACCSSS0116	Red / brown, fine sand, dry
	ACCSSS0117	Dark brown silt, wet, slight sulphur odour
	ACCSSS0118	Light brown, silty gravelly clay, gravel is fine and coarse, dry
Storage Yard BioMax Facility	ACCSSS0119	Light brown, gravelly silty clay, dry
	ACCSSS0120	Red / brown, silty clay, dry
	ACCSSS0121	Red / brown, silty clay, dry
	ACCSSS0122	Red / brown, gravelly clay, gravel fine, dry
Medical Centre BioMax Facility		
Inert Landfill		
MAC Medical Centre (Emergency Vehicle Washdown Area)		
New Firefighting Training Ground		
New Putrescible Landfill		

APPENDIX

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LABORATORY CERTIFICATES OF ANALYSIS

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CHAIN OF CUSTODY

ALS COC#: 26151 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: ND 9:45 1/9/21	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

Environmental Division Perth

Work Order Reference

EP2109734

Telephone : +61-8-9406 1301

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	QC101		19/08/2021 08:32 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
002	SW003		19/08/2021 08:45 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
003	SW004		19/08/2021 10:17 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
004	SW005		19/08/2021 11:02 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
005	SW018		19/08/2021 04:58 PM	Water	ALS: 2 Non ALS: 0	No		X		
006	SW023		20/08/2021 08:19 AM	Water	ALS: 2 Non ALS: 0	No		X		
007	SW010		20/08/2021 10:49 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
008	SW009		20/08/2021 10:56 AM	Water	ALS: 3 Non ALS: 0	No		X		
009	SW017		20/08/2021 11:14 AM	Water	ALS: 3 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

ALS COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	SW016		20/08/2021 12:07 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
011	SW011		20/08/2021 01:55 PM	Water	ALS: 3 Non ALS: 0	No	X			
012	SW012		20/08/2021 01:56 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
013	QC105		20/08/2021 02:26 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
014	SW006		20/08/2021 02:59 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
015	QC107		20/08/2021 05:41 PM	Water	ALS: 2 Non ALS: 0	No		X		
016	QC108		20/08/2021 05:42 PM	Water	ALS: 2 Non ALS: 0	No		X		
017	GF0964R		21/08/2021 06:54 AM	Water	ALS: 3 Non ALS: 0	No		X		
018	GF0965R		21/08/2021 07:06 AM	Water	ALS: 3 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	PSA0598R		21/08/2021 09:17 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
020	SF2203R		21/08/2021 04:01 PM	Water	ALS: 3 Non ALS: 0	No		X		
021	QC113		21/08/2021 05:13 PM	Water	ALS: 2 Non ALS: 0	No		X		
022	QC114		21/08/2021 05:14 PM	Water	ALS: 2 Non ALS: 0	No		X		
023	Pond 2		22/08/2021 11:19 AM	Water	ALS: 3 Non ALS: 0	No		X		
024	Pond 1		22/08/2021 11:30 AM	Water	ALS: 3 Non ALS: 0	No		X		
025	SW019		22/08/2021 03:13 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
026	SW020		22/08/2021 03:14 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
027	HGA0040P		22/08/2021 04:33 PM	Water	ALS: 3 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

ALS COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	HGA0041P		22/08/2021 04:34 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
029	HGA0062P		22/08/2021 04:37 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
030	HGA0065P		22/08/2021 04:38 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
031	HGA0070P		22/08/2021 04:41 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
032	HGA0074P		22/08/2021 04:43 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
033	HGA0077		22/08/2021 04:44 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
034	HGC0163		22/08/2021 04:45 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
035	HGC0165		22/08/2021 04:49 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
036	HGC0244		22/08/2021 04:52 PM	Water	ALS: 3 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

ALS COC#: 26151 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	HGC0253		22/08/2021 04:54 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
038	HGC0265		22/08/2021 04:55 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
039	HGC0189		22/08/2021 04:56 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
040	HGC0200		22/08/2021 04:57 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
041	HGC0213		22/08/2021 04:59 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
042	HGC0202		22/08/2021 05:00 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
043	HGC0233		22/08/2021 05:01 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
044	HGE0243		22/08/2021 05:03 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
045	HGE0246		22/08/2021 05:04 PM	Water	ALS: 3 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

ALS COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	HGE0148		22/08/2021 05:05 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
047	HGE0201		22/08/2021 05:06 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
048	HGE0192		22/08/2021 05:07 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
049	HGE0226		22/08/2021 05:09 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
050	HGE0252		22/08/2021 05:10 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
051	QC118		22/08/2021 05:22 PM	Water	ALS: 2 Non ALS: 0	No		X		
052	QC119		22/08/2021 05:22 PM	Water	ALS: 2 Non ALS: 0	No		X		
053	QC120		22/08/2021 05:25 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
054	QC121		22/08/2021 05:27 PM	Water	ALS: 3 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

(ALS) COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	QC122		22/08/2021 05:27 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
056	QC124		23/08/2021 03:31 PM	Water	ALS: 2 Non ALS: 0	No		X		
057	QC123		23/08/2021 03:32 PM	Water	ALS: 2 Non ALS: 0	No		X		
058	Portable Bore A		24/08/2021 08:02 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
059	Potable Bore B		24/08/2021 08:10 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
060	HGSL0014P		24/08/2021 09:00 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
061	HGSL0038P		24/08/2021 09:12 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
062	SPRINKLER SF1		24/08/2021 10:48 AM	Water	ALS: 3 Non ALS: 0	No	X	X		
063	POOL SF2		24/08/2021 11:21 AM	Water	ALS: 3 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

(ALS) COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	Basic CSG Suite WATER	SUT PFAS Water Suite WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	Mulla WWTP Effluent		24/08/2021 01:13 PM	Water	ALS: 3 Non ALS: 0	No	X	X		
065	QC128		24/08/2021 01:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
066	QC129		24/08/2021 01:31 PM	Water	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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

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PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

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SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	QC101	HDPE (no PTFE)	125 mL	00350121019687	Grey	No	
001	QC101	HDPE (no PTFE)	125 mL	00350121019658	Grey	No	
001	QC101	Clear Plastic Bottle - Natural	500 mL	00070121181633	Green	No	
002	SW003	HDPE (no PTFE)	125 mL	00350121019451	Grey	No	
002	SW003	HDPE (no PTFE)	125 mL	00350121019662	Grey	No	
002	SW003	Clear Plastic Bottle - Natural	500 mL	00070121181643	Green	No	
003	SW004	HDPE (no PTFE)	125 mL	00350121019606	Grey	No	
003	SW004	HDPE (no PTFE)	125 mL	00350121019642	Grey	No	
003	SW004	Clear Plastic Bottle - Natural	500 mL	00070121181616	Green	No	
004	SW005	HDPE (no PTFE)	125 mL	00350121019646	Grey	No	
004	SW005	HDPE (no PTFE)	125 mL	00350121019487	Grey	No	
004	SW005	Clear Plastic Bottle - Natural	500 mL	00070121181613	Green	No	
005	SW018	HDPE (no PTFE)	125 mL	00350121019584	Grey	No	
005	SW018	HDPE (no PTFE)	125 mL	00350121019649	Grey	No	
006	SW023	HDPE (no PTFE)	125 mL	00350121019689	Grey	No	
006	SW023	HDPE (no PTFE)	125 mL	00350121019580	Grey	No	
007	SW010	HDPE (no PTFE)	125 mL	00350121019485	Grey	No	
007	SW010	HDPE (no PTFE)	125 mL	00350121019605	Grey	No	
007	SW010	Clear Plastic Bottle - Natural	500 mL	00070121181639	Green	No	
008	SW009	HDPE (no PTFE)	125 mL	00350121019615	Grey	No	
008	SW009	HDPE (no PTFE)	125 mL	00350121019514	Grey	No	
008	SW009	Clear Plastic Bottle - Natural	500 mL	00070121181638	Green	No	
009	SW017	HDPE (no PTFE)	125 mL	00350121019683	Grey	No	
009	SW017	HDPE (no PTFE)	125 mL	00350121019557	Grey	No	
009	SW017	Clear Plastic Bottle - Natural	500 mL	00070121181628	Green	No	
010	SW016	HDPE (no PTFE)	125 mL	00350121021204	Grey	No	

CHAIN OF CUSTODY

COC#: 26151 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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010	SW016	HDPE (no PTFE)	125 mL	00350121020134	Grey	No	
010	SW016	Clear Plastic Bottle - Natural	500 mL	00070121181634	Green	No	
011	SW011	HDPE (no PTFE)	125 mL	00350121019462	Grey	No	
011	SW011	HDPE (no PTFE)	125 mL	00350121019569	Grey	No	
011	SW011	Clear Plastic Bottle - Natural	500 mL	00070121181602	Green	No	
012	SW012	Clear Plastic Bottle - Natural	500 mL	00070121181610	Green	No	
012	SW012	HDPE (no PTFE)	125 mL	00350121019678	Grey	No	
012	SW012	HDPE (no PTFE)	125 mL	00350121019481	Grey	No	
013	QC105	Clear Plastic Bottle - Natural	500 mL	00070121181612	Green	No	
013	QC105	HDPE (no PTFE)	125 mL	00350121020280	Grey	No	
013	QC105	HDPE (no PTFE)	125 mL	00350121019554	Grey	No	
014	SW006	Clear Plastic Bottle - Natural	500 mL	00070121181591	Green	No	
014	SW006	HDPE (no PTFE)	125 mL	00350719003682	Grey	No	
014	SW006	HDPE (no PTFE)	125 mL	00350719003801	Grey	No	
015	QC107	HDPE (no PTFE)	125 mL	00350121012784	Grey	No	
015	QC107	HDPE (no PTFE)	125 mL	00350121012713	Grey	No	
016	QC108	HDPE (no PTFE)	125 mL	00350121012926	Grey	No	
016	QC108	HDPE (no PTFE)	125 mL	00350121012905	Grey	No	
017	GF0964R	Clear Plastic Bottle - Natural	500 mL	00070121181590	Green	No	
017	GF0964R	HDPE (no PTFE)	125 mL	00350121020078	Grey	No	
017	GF0964R	HDPE (no PTFE)	125 mL	00350121020288	Grey	No	
018	GF0965R	Clear Plastic Bottle - Natural	500 mL	00070121181604	Green	No	
018	GF0965R	HDPE (no PTFE)	125 mL	00350121020121	Grey	No	
018	GF0965R	HDPE (no PTFE)	125 mL	00350121020210	Grey	No	
019	PSA0598R	Clear Plastic Bottle - Natural	500 mL	00070121181625	Green	No	
019	PSA0598R	HDPE (no PTFE)	125 mL	00350121012874	Grey	No	
019	PSA0598R	HDPE (no PTFE)	125 mL	00350121012680	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 26151 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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020	SF2203R	HDPE (no PTFE)	125 mL	00350121012854	Grey	No	
020	SF2203R	HDPE (no PTFE)	125 mL	00350121012845	Grey	No	
020	SF2203R	Clear Plastic Bottle - Natural	500 mL	00070121181607	Green	No	
021	QC113	HDPE (no PTFE)	125 mL	00350121012823	Grey	No	
021	QC113	HDPE (no PTFE)	125 mL	00350121012928	Grey	No	
022	QC114	HDPE (no PTFE)	125 mL	00350121012814	Grey	No	
022	QC114	HDPE (no PTFE)	125 mL	00350121012646	Grey	No	
023	Pond 2	Clear Plastic Bottle - Natural	500 mL	00070121181597	Green	No	
023	Pond 2	HDPE (no PTFE)	125 mL	00350121012767	Grey	No	
023	Pond 2	HDPE (no PTFE)	125 mL	00350121012862	Grey	No	
024	Pond 1	Clear Plastic Bottle - Natural	500 mL	00070121181636	Green	No	
024	Pond 1	HDPE (no PTFE)	125 mL	00350121019681	Grey	No	
024	Pond 1	HDPE (no PTFE)	125 mL	00350121019566	Grey	No	
025	SW019	Clear Plastic Bottle - Natural	500 mL	00070121181455	Green	No	
025	SW019	HDPE (no PTFE)	125 mL	00350121012782	Grey	No	
025	SW019	HDPE (no PTFE)	125 mL	00350121012903	Grey	No	
026	SW020	Clear Plastic Bottle - Natural	500 mL	00070121181576	Green	No	
026	SW020	HDPE (no PTFE)	125 mL	00350121019426	Grey	No	
026	SW020	HDPE (no PTFE)	125 mL	00350121019636	Grey	No	
027	HGA0040P	Clear Plastic Bottle - Natural	500 mL	00070121181611	Green	No	
027	HGA0040P	HDPE (no PTFE)	125 mL	00350121012937	Grey	No	
027	HGA0040P	HDPE (no PTFE)	125 mL	00350121012917	Grey	No	
028	HGA0041P	Clear Plastic Bottle - Natural	500 mL	00070121181595	Green	No	
028	HGA0041P	HDPE (no PTFE)	125 mL	00350121012706	Grey	No	
028	HGA0041P	HDPE (no PTFE)	125 mL	00350121012818	Grey	No	
029	HGA0062P	Clear Plastic Bottle - Natural	500 mL	00070121181589	Green	No	
029	HGA0062P	HDPE (no PTFE)	125 mL	00350121012707	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 26151 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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029	HGA0062P	HDPE (no PTFE)	125 mL	00350121012927	Grey	No	
030	HGA0065P	HDPE (no PTFE)	125 mL	00350121012855	Grey	No	
030	HGA0065P	HDPE (no PTFE)	125 mL	00350121012870	Grey	No	
030	HGA0065P	Clear Plastic Bottle - Natural	500 mL	00070121181546	Green	No	
031	HGA0070P	Clear Plastic Bottle - Natural	500 mL	00070121181605	Green	No	
031	HGA0070P	HDPE (no PTFE)	125 mL	00350121012681	Grey	No	
031	HGA0070P	HDPE (no PTFE)	125 mL	00350121012883	Grey	No	
032	HGA0074P	HDPE (no PTFE)	125 mL	00350121012923	Grey	No	
032	HGA0074P	HDPE (no PTFE)	125 mL	00350121012848	Grey	No	
032	HGA0074P	Clear Plastic Bottle - Natural	500 mL	00070121181617	Green	No	
033	HGA0077	Clear Plastic Bottle - Natural	500 mL	00070121181632	Green	No	
033	HGA0077	HDPE (no PTFE)	125 mL	00350121012859	Grey	No	
033	HGA0077	HDPE (no PTFE)	125 mL	00350121012816	Grey	No	
034	HGC0163	HDPE (no PTFE)	125 mL	00350121012803	Grey	No	
034	HGC0163	HDPE (no PTFE)	125 mL	00350121012916	Grey	No	
034	HGC0163	Clear Plastic Bottle - Natural	500 mL	00070121181615	Green	No	
035	HGC0165	Clear Plastic Bottle - Natural	500 mL	00070121181630	Green	No	
035	HGC0165	HDPE (no PTFE)	125 mL	00350121012759	Grey	No	
035	HGC0165	HDPE (no PTFE)	125 mL	00350121012799	Grey	No	
036	HGC0244	Clear Plastic Bottle - Natural	500 mL	00070121181609	Green	No	
036	HGC0244	HDPE (no PTFE)	125 mL	00350121012791	Grey	No	
036	HGC0244	HDPE (no PTFE)	125 mL	00350121012873	Grey	No	
037	HGC0253	Clear Plastic Bottle - Natural	500 mL	00070121181596	Green	No	
037	HGC0253	HDPE (no PTFE)	125 mL	00350121019500	Grey	No	
037	HGC0253	HDPE (no PTFE)	125 mL	00350121019577	Grey	No	
038	HGC0265	Clear Plastic Bottle - Natural	500 mL	00070121181600	Green	No	
038	HGC0265	HDPE (no PTFE)	125 mL	00350121012741	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
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CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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038	HGC0265	HDPE (no PTFE)	125 mL	00350121012788	Grey	No	
039	HGC0189	Clear Plastic Bottle - Natural	500 mL	00070121181530	Green	No	
039	HGC0189	HDPE (no PTFE)	125 mL	00350121019530	Grey	No	
039	HGC0189	HDPE (no PTFE)	125 mL	00350121019574	Grey	No	
040	HGC0200	Clear Plastic Bottle - Natural	500 mL	00070121181575	Green	No	
040	HGC0200	HDPE (no PTFE)	125 mL	00350121019440	Grey	No	
040	HGC0200	HDPE (no PTFE)	125 mL	00350121019461	Grey	No	
041	HGC0213	Clear Plastic Bottle - Natural	500 mL	00070121181529	Green	No	
041	HGC0213	HDPE (no PTFE)	125 mL	00350121012786	Grey	No	
041	HGC0213	HDPE (no PTFE)	125 mL	00350121012824	Grey	No	
042	HGC0202	Clear Plastic Bottle - Natural	500 mL	00070121181531	Green	No	
042	HGC0202	HDPE (no PTFE)	125 mL	00350121012812	Grey	No	
042	HGC0202	HDPE (no PTFE)	125 mL	00350121012899	Grey	No	
043	HGC0233	Clear Plastic Bottle - Natural	500 mL	00070121181614	Green	No	
043	HGC0233	HDPE (no PTFE)	125 mL	00350121012860	Grey	No	
043	HGC0233	HDPE (no PTFE)	125 mL	00350121012838	Grey	No	
044	HGE0243	Clear Plastic Bottle - Natural	500 mL	00070121181536	Green	No	
044	HGE0243	HDPE (no PTFE)	125 mL	00350121012867	Grey	No	
044	HGE0243	HDPE (no PTFE)	125 mL	00350121012794	Grey	No	
045	HGE0246	Clear Plastic Bottle - Natural	500 mL	00070121181606	Green	No	
045	HGE0246	HDPE (no PTFE)	125 mL	00350121019472	Grey	No	
045	HGE0246	HDPE (no PTFE)	125 mL	00350121019498	Grey	No	
046	HGE0148	Clear Plastic Bottle - Natural	500 mL	00070121181523	Green	No	
046	HGE0148	HDPE (no PTFE)	125 mL	00350121012699	Grey	No	
046	HGE0148	HDPE (no PTFE)	125 mL	00350121012669	Grey	No	
047	HGE0201	Clear Plastic Bottle - Natural	500 mL	00070121181598	Green	No	
047	HGE0201	HDPE (no PTFE)	125 mL	00350121012924	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: **26151** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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047	HGE0201	HDPE (no PTFE)	125 mL	00350121012884	Grey	No	
048	HGE0192	Clear Plastic Bottle - Natural	500 mL	00070121181592	Green	No	
048	HGE0192	HDPE (no PTFE)	125 mL	00350121012789	Grey	No	
048	HGE0192	HDPE (no PTFE)	125 mL	00350121012749	Grey	No	
049	HGE0226	Clear Plastic Bottle - Natural	500 mL	00070121181623	Green	No	
049	HGE0226	HDPE (no PTFE)	125 mL	00350121012730	Grey	No	
049	HGE0226	HDPE (no PTFE)	125 mL	00350121012732	Grey	No	
050	HGE0252	Clear Plastic Bottle - Natural	500 mL	00070121181608	Green	No	
050	HGE0252	HDPE (no PTFE)	125 mL	00350121019460	Grey	No	
050	HGE0252	HDPE (no PTFE)	125 mL	00350121019656	Grey	No	
051	QC118	HDPE (no PTFE)	125 mL	00350121019590	Grey	No	
051	QC118	HDPE (no PTFE)	125 mL	00350121019696	Grey	No	
052	QC119	HDPE (no PTFE)	125 mL	00350121019702	Grey	No	
052	QC119	HDPE (no PTFE)	125 mL	00350121019527	Grey	No	
053	QC120	Clear Plastic Bottle - Natural	500 mL	00070121181601	Green	No	
053	QC120	HDPE (no PTFE)	125 mL	00350121019608	Grey	No	
053	QC120	HDPE (no PTFE)	125 mL	00350121019541	Grey	No	
054	QC121	Clear Plastic Bottle - Natural	500 mL	00070121181603	Green	No	
054	QC121	HDPE (no PTFE)	125 mL	00350121019613	Grey	No	
054	QC121	HDPE (no PTFE)	125 mL	00350121019540	Grey	No	
055	QC122	Clear Plastic Bottle - Natural	500 mL	00070121181524	Green	No	
055	QC122	HDPE (no PTFE)	125 mL	00350121019622	Grey	No	
055	QC122	HDPE (no PTFE)	125 mL	00350121019532	Grey	No	
056	QC124	HDPE (no PTFE)	125 mL	00350121012653	Grey	No	
056	QC124	HDPE (no PTFE)	125 mL	00350121012931	Grey	No	
057	QC123	HDPE (no PTFE)	125 mL	00350121012765	Grey	No	
057	QC123	HDPE (no PTFE)	125 mL	00350121012909	Grey	No	

CHAIN OF CUSTODY

ALS COC#: **26151** *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

058	Portable Bore A	Clear Plastic Bottle - Natural	500 mL	00070121181570	Green	No	
058	Portable Bore A	HDPE (no PTFE)	125 mL	00350121012727	Grey	No	
058	Portable Bore A	HDPE (no PTFE)	125 mL	00350121012847	Grey	No	
059	Potable Bore B	Clear Plastic Bottle - Natural	500 mL	00070121181568	Green	No	
059	Potable Bore B	HDPE (no PTFE)	125 mL	00350121012725	Grey	No	
059	Potable Bore B	HDPE (no PTFE)	125 mL	00350121012709	Grey	No	
060	HGSL0014P	Clear Plastic Bottle - Natural	500 mL	00070121181599	Green	No	
060	HGSL0014P	HDPE (no PTFE)	125 mL	00350121012658	Grey	No	
060	HGSL0014P	HDPE (no PTFE)	125 mL	00350121012763	Grey	No	
061	HGSL0038P	HDPE (no PTFE)	125 mL	00350121019686	Grey	No	
061	HGSL0038P	HDPE (no PTFE)	125 mL	00350121019458	Grey	No	
061	HGSL0038P	Clear Plastic Bottle - Natural	500 mL	00070121181574	Green	No	
062	SPRINKLER SF1	Clear Plastic Bottle - Natural	500 mL	00070121181556	Green	No	
062	SPRINKLER SF1	HDPE (no PTFE)	125 mL	00350121012877	Grey	No	
062	SPRINKLER SF1	HDPE (no PTFE)	125 mL	00350121012887	Grey	No	
063	POOL SF2	Clear Plastic Bottle - Natural	500 mL	00070121181526	Green	No	
063	POOL SF2	HDPE (no PTFE)	125 mL	00350121012828	Grey	No	
063	POOL SF2	HDPE (no PTFE)	125 mL	00350121012806	Grey	No	
064	Mulla WWTP Effluent	Clear Plastic Bottle - Natural	500 mL	00070121181554	Green	No	
064	Mulla WWTP Effluent	HDPE (no PTFE)	125 mL	00350121019499	Grey	No	
064	Mulla WWTP Effluent	HDPE (no PTFE)	125 mL	00350121019521	Grey	No	
065	QC128	HDPE (no PTFE)	125 mL	00350121019547	Grey	No	
065	QC128	HDPE (no PTFE)	125 mL	00350121019529	Grey	No	
066	QC129	HDPE (no PTFE)	125 mL	00350121019717	Grey	No	
066	QC129	HDPE (no PTFE)	125 mL	00350121019425	Grey	No	

Total Bottle Count: ALS: 186, Non ALS: 0

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EP2109734**

Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
E-mail	: mark.harris2@cardno.com.au	E-mail	: nick.courts@alsglobal.com
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Facsimile	: ----	Facsimile	: +61-8-9406 1399
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Page	: 1 of 6
Order number	: CW1173100	Quote number	: EP2021CARBSD0020 (EP/726/21)
C-O-C number	: 26151	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Sampler	: Mark Harris, Mickayla Graham		

Dates

Date Samples Received	: 01-Sep-2021 09:45	Issue Date	: 06-Sep-2021
Client Requested Due Date	: 14-Sep-2021	Scheduled Reporting Date	: **10-Sep-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 20	Temperature	: 20.1 - Ice present
Receipt Detail	: Ice Melted	No. of samples received / analysed	: 74 / 74

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
- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (Samples.Perth@alsglobal.com)
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911.**
- **pH analysis should be conducted within 6 hours of sampling.**
- **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 - CSG-1 Basic CSG Suite	WATER - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29
EP2109734-001	19-Aug-2021 08:32	QC101	✓	✓
EP2109734-002	19-Aug-2021 08:45	SW003	✓	✓
EP2109734-003	19-Aug-2021 10:17	SW004	✓	✓
EP2109734-004	19-Aug-2021 11:02	SW005	✓	✓
EP2109734-005	19-Aug-2021 16:58	SW018		✓
EP2109734-006	20-Aug-2021 08:19	SW023		✓
EP2109734-007	20-Aug-2021 10:49	SW010	✓	✓
EP2109734-008	20-Aug-2021 10:56	SW009	✓	✓
EP2109734-009	20-Aug-2021 11:14	SW017	✓	✓
EP2109734-010	20-Aug-2021 12:07	SW016	✓	✓
EP2109734-011	20-Aug-2021 13:55	SW011	✓	✓
EP2109734-012	20-Aug-2021 13:56	SW012	✓	✓
EP2109734-013	20-Aug-2021 14:26	QC105	✓	✓
EP2109734-014	20-Aug-2021 14:59	SW006	✓	✓
EP2109734-015	20-Aug-2021 17:41	QC107		✓
EP2109734-016	20-Aug-2021 17:42	QC108		✓
EP2109734-017	21-Aug-2021 06:54	GF0964R	✓	✓
EP2109734-018	21-Aug-2021 07:06	GF0965R	✓	✓
EP2109734-019	21-Aug-2021 09:17	PSA0598R	✓	✓
EP2109734-020	21-Aug-2021 16:01	SF2203R	✓	✓
EP2109734-021	21-Aug-2021 17:13	QC113		✓
EP2109734-022	21-Aug-2021 17:14	QC114		✓
EP2109734-023	22-Aug-2021 11:19	SW022	✓	✓
EP2109734-024	22-Aug-2021 11:30	SW021	✓	✓
EP2109734-025	22-Aug-2021 15:13	SW019	✓	✓
EP2109734-026	22-Aug-2021 15:14	SW020	✓	✓
EP2109734-027	22-Aug-2021 16:33	HGA0040P	✓	✓
EP2109734-028	22-Aug-2021 16:34	HGA0041P	✓	✓
EP2109734-029	22-Aug-2021 16:37	HGA0062P	✓	✓
EP2109734-030	22-Aug-2021 16:38	HGA0065P	✓	✓
EP2109734-031	22-Aug-2021 16:41	HGA0070P	✓	✓
EP2109734-032	22-Aug-2021 16:43	HGA0074P	✓	✓
EP2109734-033	22-Aug-2021 16:44	HGA0077	✓	✓
EP2109734-034	22-Aug-2021 16:45	HGC0163	✓	✓
EP2109734-035	22-Aug-2021 16:49	HGC0165	✓	✓

			WATER - CSG-1 Basic CSG Suite	WATER - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29
EP2109734-036	22-Aug-2021 16:52	HGC0244	✓	✓
EP2109734-037	22-Aug-2021 16:54	HGC0253	✓	✓
EP2109734-038	22-Aug-2021 16:55	HGC0265	✓	✓
EP2109734-039	22-Aug-2021 16:56	HGC0189	✓	✓
EP2109734-040	22-Aug-2021 16:57	HGC0200	✓	✓
EP2109734-041	22-Aug-2021 16:59	HGC0213	✓	✓
EP2109734-042	22-Aug-2021 17:00	HGC0202	✓	✓
EP2109734-043	22-Aug-2021 17:01	HGC0233	✓	✓
EP2109734-044	22-Aug-2021 17:03	HGE0243	✓	✓
EP2109734-045	22-Aug-2021 17:04	HGE0246	✓	✓
EP2109734-046	22-Aug-2021 17:05	HGE0148	✓	✓
EP2109734-047	22-Aug-2021 17:06	HGE0201	✓	✓
EP2109734-048	22-Aug-2021 17:07	HGE0192	✓	✓
EP2109734-049	22-Aug-2021 17:09	HGE0226	✓	✓
EP2109734-050	22-Aug-2021 17:10	HGE0252	✓	✓
EP2109734-051	22-Aug-2021 17:22	QC118		✓
EP2109734-052	22-Aug-2021 17:22	QC119		✓
EP2109734-053	22-Aug-2021 17:25	QC120	✓	✓
EP2109734-054	22-Aug-2021 17:27	QC121	✓	✓
EP2109734-055	22-Aug-2021 17:27	QC122	✓	✓
EP2109734-056	23-Aug-2021 15:31	QC124		✓
EP2109734-057	23-Aug-2021 15:32	QC123		✓
EP2109734-058	24-Aug-2021 08:02	HNPIAC0001P	✓	✓
EP2109734-059	24-Aug-2021 08:10	HNPIAC0002P	✓	✓
EP2109734-060	24-Aug-2021 09:00	HGSL0014P	✓	✓
EP2109734-061	24-Aug-2021 09:12	HGSL0038P	✓	✓
EP2109734-062	24-Aug-2021 10:48	SPRINKLER SF1	✓	✓
EP2109734-063	24-Aug-2021 11:21	POOL SF2	✓	✓
EP2109734-064	24-Aug-2021 13:13	SW001	✓	✓
EP2109734-065	24-Aug-2021 13:30	QC128		✓
EP2109734-066	24-Aug-2021 13:31	QC129		✓
EP2109734-067	19-Aug-2021 00:00	TBW739		✓
EP2109734-068	19-Aug-2021 00:00	TBW740		✓
EP2109734-069	19-Aug-2021 00:00	TBW745		✓
EP2109734-070	19-Aug-2021 00:00	TBW744		✓
EP2109734-071	19-Aug-2021 00:00	TBW746		✓
EP2109734-072	19-Aug-2021 00:00	TBW747		✓
EP2109734-073	19-Aug-2021 00:00	QC102		✓
EP2109734-074	19-Aug-2021 00:00	QC103		✓

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
GF0964R	Clear Plastic Bottle - Natural	----	21-Aug-2021	01-Sep-2021	×	----	----
GF0965R	Clear Plastic Bottle - Natural	----	21-Aug-2021	01-Sep-2021	×	----	----
HGA0040P	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGA0041P	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGA0062P	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGA0065P	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGA0070P	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGA0074P	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGA0077	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0163	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0165	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0189	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0200	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0202	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0213	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0233	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0244	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0253	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGC0265	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGE0148	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGE0192	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGE0201	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGE0226	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGE0243	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGE0246	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGE0252	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
HGSL0014P	Clear Plastic Bottle - Natural	----	24-Aug-2021	01-Sep-2021	×	----	----
HGSL0038P	Clear Plastic Bottle - Natural	----	24-Aug-2021	01-Sep-2021	×	----	----
HNPIAC0001P	Clear Plastic Bottle - Natural	----	24-Aug-2021	01-Sep-2021	×	----	----
HNPIAC0002P	Clear Plastic Bottle - Natural	----	24-Aug-2021	01-Sep-2021	×	----	----
POOL SF2	Clear Plastic Bottle - Natural	----	24-Aug-2021	01-Sep-2021	×	----	----
PSA0598R	Clear Plastic Bottle - Natural	----	21-Aug-2021	01-Sep-2021	×	----	----
QC101	Clear Plastic Bottle - Natural	----	19-Aug-2021	01-Sep-2021	×	----	----
QC105	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
QC120	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
QC121	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
QC122	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
SF2203R	Clear Plastic Bottle - Natural	----	21-Aug-2021	01-Sep-2021	×	----	----
SPRINKLER SF1	Clear Plastic Bottle - Natural	----	24-Aug-2021	01-Sep-2021	×	----	----
SW001	Clear Plastic Bottle - Natural	----	24-Aug-2021	01-Sep-2021	×	----	----
SW003	Clear Plastic Bottle - Natural	----	19-Aug-2021	01-Sep-2021	×	----	----
SW004	Clear Plastic Bottle - Natural	----	19-Aug-2021	01-Sep-2021	×	----	----
SW005	Clear Plastic Bottle - Natural	----	19-Aug-2021	01-Sep-2021	×	----	----
SW006	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
SW009	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
SW010	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
SW011	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
SW012	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
SW016	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
SW017	Clear Plastic Bottle - Natural	----	20-Aug-2021	01-Sep-2021	×	----	----
SW019	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
SW020	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
SW021	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
SW022	Clear Plastic Bottle - Natural	----	22-Aug-2021	01-Sep-2021	×	----	----
ED093F: Major Cations - Dissolved							
GF0964R	Clear Plastic Bottle - Natural	----	28-Aug-2021	01-Sep-2021	×	----	----
GF0965R	Clear Plastic Bottle - Natural	----	28-Aug-2021	01-Sep-2021	×	----	----
HGA0040P	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	×	----	----
HGA0041P	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	×	----	----

HGA0062P	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGA0065P	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGA0070P	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGA0074P	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGA0077	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0163	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0165	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0189	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0200	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0202	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0213	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0233	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0244	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0253	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGC0265	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGE0148	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGE0192	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGE0201	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGE0226	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGE0243	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGE0246	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGE0252	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
HGSL0014P	Clear Plastic Bottle - Natural	----	31-Aug-2021	01-Sep-2021	✘	----	----
HGSL0038P	Clear Plastic Bottle - Natural	----	31-Aug-2021	01-Sep-2021	✘	----	----
HNPIAC0001P	Clear Plastic Bottle - Natural	----	31-Aug-2021	01-Sep-2021	✘	----	----
HNPIAC0002P	Clear Plastic Bottle - Natural	----	31-Aug-2021	01-Sep-2021	✘	----	----
POOL SF2	Clear Plastic Bottle - Natural	----	31-Aug-2021	01-Sep-2021	✘	----	----
PSA0598R	Clear Plastic Bottle - Natural	----	28-Aug-2021	01-Sep-2021	✘	----	----
QC101	Clear Plastic Bottle - Natural	----	26-Aug-2021	01-Sep-2021	✘	----	----
QC105	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
QC120	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
QC121	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
QC122	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
SF2203R	Clear Plastic Bottle - Natural	----	28-Aug-2021	01-Sep-2021	✘	----	----
SPRINKLER SF1	Clear Plastic Bottle - Natural	----	31-Aug-2021	01-Sep-2021	✘	----	----
SW001	Clear Plastic Bottle - Natural	----	31-Aug-2021	01-Sep-2021	✘	----	----
SW003	Clear Plastic Bottle - Natural	----	26-Aug-2021	01-Sep-2021	✘	----	----
SW004	Clear Plastic Bottle - Natural	----	26-Aug-2021	01-Sep-2021	✘	----	----
SW005	Clear Plastic Bottle - Natural	----	26-Aug-2021	01-Sep-2021	✘	----	----
SW006	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
SW009	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
SW010	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
SW011	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
SW012	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
SW016	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
SW017	Clear Plastic Bottle - Natural	----	27-Aug-2021	01-Sep-2021	✘	----	----
SW019	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
SW020	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
SW021	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----
SW022	Clear Plastic Bottle - Natural	----	29-Aug-2021	01-Sep-2021	✘	----	----

Requested Deliverables

ACCOUNTS PAYABLE (WA)

- A4 - AU Tax Invoice (INV)	Email	claire.armstrong@cardno.com.au

Laura Beames

- A4 - AU Tax Invoice (INV)	Email	laura.beames@cardno.com.au

Mark Harris

- *AU Certificate of Analysis - NATA (COA)	Email	mark.harris2@cardno.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	mark.harris2@cardno.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	mark.harris2@cardno.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	mark.harris2@cardno.com.au
- Chain of Custody (CoC) (COC)	Email	mark.harris2@cardno.com.au
- EDI Format - ESDAT (ESDAT)	Email	mark.harris2@cardno.com.au

Mickayla Graham

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP2109734**	Page	: 1 of 50
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021 09:45
Order number	: CW1173100	Date Analysis Commenced	: 03-Sep-2021
C-O-C number	: 26151	Issue Date	: 14-Sep-2021 21:06
Sampler	: Mark Harris, Mickayla Graham		
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Quote number	: EP/726/21		
No. of samples received	: 74		
No. of samples analysed	: 74		

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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
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.

- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the Chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- EP231X-SUT: Samples EP2109734_005, 006, 023 & 024 required dilution due to sample matrix interferences (Internal Standard peak suppression). LOR values have been adjusted accordingly.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- 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	GF0964R	GF0965R	PSA0598R	SF2203R	HGA0040P
				Sampling date / time	21-Aug-2021 06:54	21-Aug-2021 07:06	21-Aug-2021 09:17	21-Aug-2021 16:01	22-Aug-2021 16:33
Compound	CAS Number	LOR	Unit		EP2109734-017	EP2109734-018	EP2109734-019	EP2109734-020	EP2109734-027
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.85	7.93	7.42	7.44	8.06
EA006: Sodium Adsorption Ratio (SAR)									
^ Sodium Adsorption Ratio	----	0.01	-		1.10	0.89	1.51	1.11	0.92
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		710	548	705	569	653
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	10	mg/L		462	356	458	370	424
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		262	214	241	209	261
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		175	156	203	197	225
Total Alkalinity as CaCO3	----	1	mg/L		175	156	203	197	225
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		42	25	63	46	46
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		59	42	77	41	52
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		52	43	47	31	50
Magnesium	7439-95-4	1	mg/L		32	26	30	32	33
Sodium	7440-23-5	1	mg/L		41	30	54	37	34
Potassium	7440-09-7	1	mg/L		10	11	10	11	10
EG052F: Dissolved Silica by ICPAES									
Silicon as SiO2	14464-46-1	0.1	mg/L		54.4	44.1	28.5	27.4	28.7
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.3	0.2	0.5	0.2	0.3
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		6.04	4.82	7.54	6.05	6.92
ø Total Cations	----	0.01	meq/L		7.27	5.87	7.42	6.07	6.94
ø Ionic Balance	----	0.01	%		9.26	9.82	0.81	0.17	0.18
EP231A: Perfluoroalkyl Sulfonic Acids									

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	GF0964R	GF0965R	PSA0598R	SF2203R	HGA0040P
				Sampling date / time	21-Aug-2021 06:54	21-Aug-2021 07:06	21-Aug-2021 09:17	21-Aug-2021 16:01	22-Aug-2021 16:33
					EP2109734-017	EP2109734-018	EP2109734-019	EP2109734-020	EP2109734-027
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	**0.0031**	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0007**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0013**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	GF0964R	GF0965R	PSA0598R	SF2203R	HGA0040P
				Sampling date / time	21-Aug-2021 06:54	21-Aug-2021 07:06	21-Aug-2021 09:17	21-Aug-2021 16:01	22-Aug-2021 16:33
					EP2109734-017	EP2109734-018	EP2109734-019	EP2109734-020	EP2109734-027
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	**0.006**	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	**0.0031**	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0007**	<0.0002	**0.0091**	<0.0002	**0.0013**
^ Sum of PFAS	----	0.0002	µg/L		**0.0007**	<0.0002	**0.0091**	<0.0002	**0.0013**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**90.7**	**94.4**	**92.3**	**88.0**	**95.9**
13C8-PFOA	----	0.0005	%		**91.8**	**89.0**	**91.6**	**92.2**	**89.8**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	HGA0041P	HGA0062P	HGA0065P	HGA0070P	HGA0074P
			Sampling date / time	22-Aug-2021 16:34	22-Aug-2021 16:37	22-Aug-2021 16:38	22-Aug-2021 16:41	22-Aug-2021 16:43
Compound	CAS Number	LOR	Unit	EP2109734-028	EP2109734-029	EP2109734-030	EP2109734-031	EP2109734-032
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.00	7.95	8.07	7.87	7.98
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	0.94	0.92	0.92	0.87	0.88
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	683	690	652	634	675
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	444	448	424	412	439
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	231	256	261	270	263
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	234	227	224	200	220
Total Alkalinity as CaCO3	----	1	mg/L	234	227	224	200	220
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	53	47	62	45	63
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	54	53	50	63	58
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	43	48	50	52	51
Magnesium	7439-95-4	1	mg/L	30	33	33	34	33
Sodium	7440-23-5	1	mg/L	33	34	34	33	33
Potassium	7440-09-7	1	mg/L	9	10	10	10	9
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	29.8	31.9	31.5	18.3	27.0
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.2	0.3	0.3	0.3
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	7.30	7.01	7.18	6.71	7.34
ø Total Cations	----	0.01	meq/L	6.28	6.84	6.94	7.08	6.93
ø Ionic Balance	----	0.01	%	7.52	1.18	1.64	2.71	2.92
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	HGA0041P	HGA0062P	HGA0065P	HGA0070P	HGA0074P
				Sampling date / time	22-Aug-2021 16:34	22-Aug-2021 16:37	22-Aug-2021 16:38	22-Aug-2021 16:41	22-Aug-2021 16:43
					EP2109734-028	EP2109734-029	EP2109734-030	EP2109734-031	EP2109734-032
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	**0.0020**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	HGA0041P	HGA0062P	HGA0065P	HGA0070P	HGA0074P
				Sampling date / time	22-Aug-2021 16:34	22-Aug-2021 16:37	22-Aug-2021 16:38	22-Aug-2021 16:41	22-Aug-2021 16:43
Compound	CAS Number	LOR	Unit		EP2109734-028	EP2109734-029	EP2109734-030	EP2109734-031	EP2109734-032
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0020**
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0020**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**97.2**	**98.6**	**98.3**	**96.4**	**98.7**
13C8-PFOA	----	0.0005	%		**90.8**	**95.9**	**92.7**	**94.0**	**88.6**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	HGA0077	HGC0163	HGC0165	HGC0244	HGC0253
			Sampling date / time	22-Aug-2021 16:44	22-Aug-2021 16:45	22-Aug-2021 16:49	22-Aug-2021 16:52	22-Aug-2021 16:54
Compound	CAS Number	LOR	Unit	EP2109734-033	EP2109734-034	EP2109734-035	EP2109734-036	EP2109734-037
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.84	7.95	7.94	7.97	7.84
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	0.99	1.03	1.20	1.00	1.06
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	656	663	669	567	635
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	426	431	435	368	413
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	248	231	233	206	231
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	221	214	215	173	222
Total Alkalinity as CaCO3	----	1	mg/L	221	214	215	173	222
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	48	43	37	32	42
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	60	65	74	54	55
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	45	43	44	38	43
Magnesium	7439-95-4	1	mg/L	33	30	30	27	30
Sodium	7440-23-5	1	mg/L	36	36	42	33	37
Potassium	7440-09-7	1	mg/L	10	9	9	8	9
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	21.3	24.2	25.7	24.6	28.7
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.3	0.3	0.3
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	7.11	7.00	7.15	5.65	6.86
ø Total Cations	----	0.01	meq/L	6.78	6.41	6.72	5.76	6.45
ø Ionic Balance	----	0.01	%	2.33	4.42	3.11	0.98	3.06
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	HGA0077	HGC0163	HGC0165	HGC0244	HGC0253
				Sampling date / time	22-Aug-2021 16:44	22-Aug-2021 16:45	22-Aug-2021 16:49	22-Aug-2021 16:52	22-Aug-2021 16:54
Compound	CAS Number	LOR	Unit		EP2109734-033	EP2109734-034	EP2109734-035	EP2109734-036	EP2109734-037
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	HGA0077	HGC0163	HGC0165	HGC0244	HGC0253
				Sampling date / time	22-Aug-2021 16:44	22-Aug-2021 16:45	22-Aug-2021 16:49	22-Aug-2021 16:52	22-Aug-2021 16:54
Compound	CAS Number	LOR	Unit		EP2109734-033	EP2109734-034	EP2109734-035	EP2109734-036	EP2109734-037
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**98.1**	**97.6**	**95.7**	**97.9**	**99.9**
13C8-PFOA	----	0.0005	%		**93.4**	**90.9**	**96.6**	**94.7**	**93.5**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	HGC0265	HGC0189	HGC0200	HGC0213	HGC0202
			Sampling date / time	22-Aug-2021 16:55	22-Aug-2021 16:56	22-Aug-2021 16:57	22-Aug-2021 16:59	22-Aug-2021 17:00
Compound	CAS Number	LOR	Unit	EP2109734-038	EP2109734-039	EP2109734-040	EP2109734-041	EP2109734-042
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.33	8.12	7.88	8.27	7.91
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	1.07	1.16	0.94	1.02	1.04
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	660	620	662	653	543
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	429	403	430	424	353
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	262	215	249	249	180
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	4	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	207	213	215	222	138
Total Alkalinity as CaCO3	----	1	mg/L	212	213	215	222	138
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	43	29	46	45	26
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	59	60	62	57	76
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	49	40	47	47	34
Magnesium	7439-95-4	1	mg/L	34	28	32	32	23
Sodium	7440-23-5	1	mg/L	40	39	34	37	32
Potassium	7440-09-7	1	mg/L	9	4	10	10	7
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	27.0	25.7	19.4	28.3	19.5
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	0.5	0.3	0.4	0.2
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	6.80	6.55	7.00	6.98	5.44
ø Total Cations	----	0.01	meq/L	7.21	6.10	6.71	6.84	5.16
ø Ionic Balance	----	0.01	%	2.98	3.58	2.10	0.98	2.66
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	HGC0265	HGC0189	HGC0200	HGC0213	HGC0202
				Sampling date / time	22-Aug-2021 16:55	22-Aug-2021 16:56	22-Aug-2021 16:57	22-Aug-2021 16:59	22-Aug-2021 17:00
Compound	CAS Number	LOR	Unit		EP2109734-038	EP2109734-039	EP2109734-040	EP2109734-041	EP2109734-042
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0005**	<0.0005	<0.0005	**0.0010**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0006**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	HGC0265	HGC0189	HGC0200	HGC0213	HGC0202
				Sampling date / time	22-Aug-2021 16:55	22-Aug-2021 16:56	22-Aug-2021 16:57	22-Aug-2021 16:59	22-Aug-2021 17:00
Compound	CAS Number	LOR	Unit		EP2109734-038	EP2109734-039	EP2109734-040	EP2109734-041	EP2109734-042
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	**0.0005**	<0.0002	<0.0002	**0.0016**
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	**0.0005**	<0.0002	<0.0002	**0.0016**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**101**	**108**	**101**	**99.2**	**106**
13C8-PFOA	----	0.0005	%		**91.9**	**92.7**	**91.5**	**92.1**	**96.2**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	HGC0233	HGE0243	HGE0246	HGE0148	HGE0201
			Sampling date / time	22-Aug-2021 17:01	22-Aug-2021 17:03	22-Aug-2021 17:04	22-Aug-2021 17:05	22-Aug-2021 17:06
Compound	CAS Number	LOR	Unit	EP2109734-043	EP2109734-044	EP2109734-045	EP2109734-046	EP2109734-047
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.17	8.10	8.00	8.06	7.96
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	1.17	0.85	0.86	0.86	0.95
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	629	592	602	607	671
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	409	385	391	394	436
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	231	236	232	229	271
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	196	212	212	209	194
Total Alkalinity as CaCO3	----	1	mg/L	196	212	212	209	194
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	34	39	38	39	45
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	64	40	39	40	53
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	43	45	45	44	49
Magnesium	7439-95-4	1	mg/L	30	30	29	29	36
Sodium	7440-23-5	1	mg/L	41	30	30	30	36
Potassium	7440-09-7	1	mg/L	5	10	10	10	10
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	26.8	36.4	34.3	34.9	30.0
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.3	0.3	0.3
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	6.43	6.18	6.13	6.12	6.31
ø Total Cations	----	0.01	meq/L	6.53	6.28	6.19	6.14	7.23
ø Ionic Balance	----	0.01	%	0.75	0.80	0.54	0.22	6.81
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	HGC0233	HGE0243	HGE0246	HGE0148	HGE0201
				Sampling date / time	22-Aug-2021 17:01	22-Aug-2021 17:03	22-Aug-2021 17:04	22-Aug-2021 17:05	22-Aug-2021 17:06
					EP2109734-043	EP2109734-044	EP2109734-045	EP2109734-046	EP2109734-047
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	HGC0233	HGE0243	HGE0246	HGE0148	HGE0201
				Sampling date / time	22-Aug-2021 17:01	22-Aug-2021 17:03	22-Aug-2021 17:04	22-Aug-2021 17:05	22-Aug-2021 17:06
Compound	CAS Number	LOR	Unit		EP2109734-043	EP2109734-044	EP2109734-045	EP2109734-046	EP2109734-047
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**102**	**104**	**104**	**97.0**	**101**
13C8-PFOA	----	0.0005	%		**98.1**	**90.9**	**92.4**	**100**	**100**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	HGE0192	HGE0226	HGE0252	QC120	QC121
			Sampling date / time	22-Aug-2021 17:07	22-Aug-2021 17:09	22-Aug-2021 17:10	22-Aug-2021 17:25	22-Aug-2021 17:27
Compound	CAS Number	LOR	Unit	EP2109734-048	EP2109734-049	EP2109734-050	EP2109734-053	EP2109734-054
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.02	7.99	8.01	8.09	8.15
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	0.87	0.91	0.88	0.87	1.15
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	672	664	661	654	629
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	437	432	430	425	409
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	271	264	267	287	239
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	193	196	206	210	193
Total Alkalinity as CaCO3	----	1	mg/L	193	196	206	210	193
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	48	47	46	42	32
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	48	50	48	47	63
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	51	48	51	54	43
Magnesium	7439-95-4	1	mg/L	35	35	34	37	32
Sodium	7440-23-5	1	mg/L	33	34	33	34	41
Potassium	7440-09-7	1	mg/L	10	10	10	10	6
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	23.1	23.6	27.4	31.7	27.6
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.3	0.2	0.3
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	6.21	6.30	6.43	6.40	6.30
ø Total Cations	----	0.01	meq/L	7.12	7.01	7.03	7.47	6.72
ø Ionic Balance	----	0.01	%	6.81	5.30	4.51	7.78	3.20
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	HGE0192	HGE0226	HGE0252	QC120	QC121
			Sampling date / time	22-Aug-2021 17:07	22-Aug-2021 17:09	22-Aug-2021 17:10	22-Aug-2021 17:25	22-Aug-2021 17:27
Compound	CAS Number	LOR	Unit	EP2109734-048	EP2109734-049	EP2109734-050	EP2109734-053	EP2109734-054
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	HGE0192	HGE0226	HGE0252	QC120	QC121
				Sampling date / time	22-Aug-2021 17:07	22-Aug-2021 17:09	22-Aug-2021 17:10	22-Aug-2021 17:25	22-Aug-2021 17:27
Compound	CAS Number	LOR	Unit		EP2109734-048	EP2109734-049	EP2109734-050	EP2109734-053	EP2109734-054
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**95.3**	**95.2**	**100**	**85.7**	**92.1**
13C8-PFOA	----	0.0005	%		**99.0**	**98.9**	**103**	**87.1**	**99.7**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	QC122	HNPIAC0001P	HNPIAC0002P	HGSL0014P	HGSL0038P
			Sampling date / time	22-Aug-2021 17:27	24-Aug-2021 08:02	24-Aug-2021 08:10	24-Aug-2021 09:00	24-Aug-2021 09:12
Compound	CAS Number	LOR	Unit	EP2109734-055	EP2109734-058	EP2109734-059	EP2109734-060	EP2109734-061
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.99	8.04	7.98	8.27	8.52
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	0.87	0.68	0.74	0.91	0.91
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	662	687	701	653	647
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	430	446	456	424	420
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	287	295	290	247	247
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	19
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	198	227	241	200	198
Total Alkalinity as CaCO3	----	1	mg/L	198	227	241	200	217
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	50	44	46	43	43
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	47	45	47	52	51
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	54	57	55	46	46
Magnesium	7439-95-4	1	mg/L	37	37	37	32	32
Sodium	7440-23-5	1	mg/L	34	27	29	33	33
Potassium	7440-09-7	1	mg/L	11	10	10	9	9
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	27.6	35.6	33.4	27.6	25.7
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.3	0.3	0.3
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	6.32	6.72	7.10	6.36	6.67
ø Total Cations	----	0.01	meq/L	7.50	7.32	7.31	6.59	6.59
ø Ionic Balance	----	0.01	%	8.52	4.26	1.44	1.83	0.56
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	QC122	HNPIAC0001P	HNPIAC0002P	HGSL0014P	HGSL0038P
				Sampling date / time	22-Aug-2021 17:27	24-Aug-2021 08:02	24-Aug-2021 08:10	24-Aug-2021 09:00	24-Aug-2021 09:12
Compound	CAS Number	LOR	Unit		EP2109734-055	EP2109734-058	EP2109734-059	EP2109734-060	EP2109734-061
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	QC122	HNPIAC0001P	HNPIAC0002P	HGSL0014P	HGSL0038P
				Sampling date / time	22-Aug-2021 17:27	24-Aug-2021 08:02	24-Aug-2021 08:10	24-Aug-2021 09:00	24-Aug-2021 09:12
Compound	CAS Number	LOR	Unit		EP2109734-055	EP2109734-058	EP2109734-059	EP2109734-060	EP2109734-061
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**92.8**	**93.6**	**90.5**	**93.4**	**99.1**
13C8-PFOA	----	0.0005	%		**98.6**	**96.4**	**96.3**	**97.9**	**95.9**

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	QC107	----	----	----	----
				Sampling date / time	20-Aug-2021 17:41	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2109734-015	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	QC107	----	----	----	----
				Sampling date / time	20-Aug-2021 17:41	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2109734-015	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	----	----	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**92.2**	----	----	----	----
13C8-PFOA	----	0.0005	%		**81.7**	----	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)			Sample ID	QC101	SW003	SW004	SW005	SW018
			Sampling date / time	19-Aug-2021 08:32	19-Aug-2021 08:45	19-Aug-2021 10:17	19-Aug-2021 11:02	19-Aug-2021 16:58
Compound	CAS Number	LOR	Unit	EP2109734-001	EP2109734-002	EP2109734-003	EP2109734-004	EP2109734-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.36	8.44	8.44	8.43	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	0.98	0.99	0.98	0.98	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	634	627	635	626	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	412	408	413	407	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	243	250	252	252	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	6	12	14	11	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	188	188	178	176	----
Total Alkalinity as CaCO3	----	1	mg/L	194	200	191	188	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	44	44	44	44	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	53	54	55	55	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	43	44	45	45	----
Magnesium	7439-95-4	1	mg/L	33	34	34	34	----
Sodium	7440-23-5	1	mg/L	35	36	36	36	----
Potassium	7440-09-7	1	mg/L	10	10	10	10	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	25.9	30.4	30.2	28.3	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.3	0.3	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	6.29	6.44	6.28	6.22	----
ø Total Cations	----	0.01	meq/L	6.64	6.82	6.86	6.86	----
ø Ionic Balance	----	0.01	%	2.73	2.87	4.42	4.90	----
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	QC101	SW003	SW004	SW005	SW018
				Sampling date / time	19-Aug-2021 08:32	19-Aug-2021 08:45	19-Aug-2021 10:17	19-Aug-2021 11:02	19-Aug-2021 16:58
Compound	CAS Number	LOR	Unit		EP2109734-001	EP2109734-002	EP2109734-003	EP2109734-004	EP2109734-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0132**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0016
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.190**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.185**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.477**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.131**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0371**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0022**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0040
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.004

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	QC101	SW003	SW004	SW005	SW018
				Sampling date / time	19-Aug-2021 08:32	19-Aug-2021 08:45	19-Aug-2021 10:17	19-Aug-2021 11:02	19-Aug-2021 16:58
Compound	CAS Number	LOR	Unit		EP2109734-001	EP2109734-002	EP2109734-003	EP2109734-004	EP2109734-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.004
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.004
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.002
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.002
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.002
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.002
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0016
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.996**
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**1.04**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**81.8**	**88.1**	**90.7**	**90.7**	**98.0**
13C8-PFOA	----	0.0005	%		**88.1**	**87.5**	**91.5**	**86.0**	**97.0**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW023	SW010	SW009	SW017	SW016
				Sampling date / time	20-Aug-2021 08:19	20-Aug-2021 10:49	20-Aug-2021 10:56	20-Aug-2021 11:14	20-Aug-2021 12:07
Compound	CAS Number	LOR	Unit		EP2109734-006	EP2109734-007	EP2109734-008	EP2109734-009	EP2109734-010
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	8.20	8.52	9.13	9.32
EA006: Sodium Adsorption Ratio (SAR)									
^ Sodium Adsorption Ratio	----	0.01	-		----	0.98	1.05	3.76	2.78
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		----	634	606	925	807
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	10	mg/L		----	412	394	601	524
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		----	242	235	174	198
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		----	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		----	<1	16	96	130
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		----	204	171	181	132
Total Alkalinity as CaCO3	----	1	mg/L		----	204	187	277	262
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		----	43	58	13	14
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		----	53	55	146	110
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		----	44	38	30	33
Magnesium	7439-95-4	1	mg/L		----	32	34	24	28
Sodium	7440-23-5	1	mg/L		----	35	37	114	90
Potassium	7440-09-7	1	mg/L		----	10	10	31	25
EG052F: Dissolved Silica by ICPAES									
Silicon as SiO2	14464-46-1	0.1	mg/L		----	28.1	28.7	19.4	34.7
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	0.3	0.3	0.2	0.2
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		----	6.47	6.50	9.92	8.63
ø Total Cations	----	0.01	meq/L		----	6.61	6.56	9.22	8.50
ø Ionic Balance	----	0.01	%		----	1.08	0.49	3.65	0.72
EP231A: Perfluoroalkyl Sulfonic Acids									

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SW023	SW010	SW009	SW017	SW016
				Sampling date / time	20-Aug-2021 08:19	20-Aug-2021 10:49	20-Aug-2021 10:56	20-Aug-2021 11:14	20-Aug-2021 12:07
					EP2109734-006	EP2109734-007	EP2109734-008	EP2109734-009	EP2109734-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0822**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0726**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.679**	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**2.62**	<0.0005	<0.0005	**0.0092**	**0.0295**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**2.13**	<0.0005	<0.0005	**0.0102**	**0.0136**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**7.50**	<0.0005	<0.0005	**0.0092**	**0.0198**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.440**	<0.0005	<0.0005	**0.0013**	**0.0024**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0564**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0258**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0403	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.040	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.040	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW023	SW010	SW009	SW017	SW016
				Sampling date / time	20-Aug-2021 08:19	20-Aug-2021 10:49	20-Aug-2021 10:56	20-Aug-2021 11:14	20-Aug-2021 12:07
Compound	CAS Number	LOR	Unit		EP2109734-006	EP2109734-007	EP2109734-008	EP2109734-009	EP2109734-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.040	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.040	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0161	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.016	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**338**	<0.001	<0.001	**0.008**	**0.004**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**1.31**	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.026**	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0726**	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**353**	<0.0002	<0.0002	**0.0379**	**0.0693**
^ Sum of PFAS	----	0.0002	µg/L		**353**	<0.0002	<0.0002	**0.0379**	**0.0693**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**Not Determined**	**88.4**	**87.4**	**86.6**	**80.1**
13C8-PFOA	----	0.0005	%		**Not Determined**	**81.4**	**82.4**	**89.0**	**87.2**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SW011	SW012	QC105	SW006	QC108
				Sampling date / time	20-Aug-2021 13:55	20-Aug-2021 13:56	20-Aug-2021 14:26	20-Aug-2021 14:59	20-Aug-2021 17:42
					EP2109734-011	EP2109734-012	EP2109734-013	EP2109734-014	EP2109734-016
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**8.46**	**8.34**	**8.34**	**8.43**	**----**
EA006: Sodium Adsorption Ratio (SAR)									
^ Sodium Adsorption Ratio	----	0.01	-		**1.00**	**0.97**	**0.96**	**1.00**	**----**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**622**	**632**	**635**	**637**	**----**
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	10	mg/L		**404**	**411**	**413**	**414**	**----**
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		**256**	**260**	**251**	**246**	**----**
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	**----**
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		**14**	**5**	**5**	**14**	**----**
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		**193**	**184**	**196**	**189**	**----**
Total Alkalinity as CaCO3	----	1	mg/L		**208**	**188**	**201**	**204**	**----**
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**44**	**42**	**46**	**44**	**----**
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		**55**	**52**	**51**	**53**	**----**
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		**45**	**48**	**46**	**44**	**----**
Magnesium	7439-95-4	1	mg/L		**35**	**34**	**33**	**33**	**----**
Sodium	7440-23-5	1	mg/L		**37**	**36**	**35**	**36**	**----**
Potassium	7440-09-7	1	mg/L		**10**	**10**	**10**	**10**	**----**
EG052F: Dissolved Silica by ICPAES									
Silicon as SiO2	14464-46-1	0.1	mg/L		**27.8**	**27.4**	**27.2**	**27.6**	**----**
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**0.3**	**0.3**	**0.3**	**0.3**	**----**
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		**6.62**	**6.10**	**6.41**	**6.49**	**----**
ø Total Cations	----	0.01	meq/L		**6.99**	**7.02**	**6.79**	**6.73**	**----**
ø Ionic Balance	----	0.01	%		**2.70**	**7.00**	**2.86**	**1.86**	**----**
EP231A: Perfluoroalkyl Sulfonic Acids									

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW011	SW012	QC105	SW006	QC108
				Sampling date / time	20-Aug-2021 13:55	20-Aug-2021 13:56	20-Aug-2021 14:26	20-Aug-2021 14:59	20-Aug-2021 17:42
Compound	CAS Number	LOR	Unit		EP2109734-011	EP2109734-012	EP2109734-013	EP2109734-014	EP2109734-016
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0007**	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW011	SW012	QC105	SW006	QC108
				Sampling date / time	20-Aug-2021 13:55	20-Aug-2021 13:56	20-Aug-2021 14:26	20-Aug-2021 14:59	20-Aug-2021 17:42
Compound	CAS Number	LOR	Unit		EP2109734-011	EP2109734-012	EP2109734-013	EP2109734-014	EP2109734-016
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	**0.0007**	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**97.1**	**86.9**	**87.0**	**94.7**	**88.1**
13C8-PFOA	----	0.0005	%		**92.0**	**85.7**	**81.4**	**81.5**	**90.5**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)			Sample ID	SW022	SW021	SW019	SW020	SPRINKLER SF1
			Sampling date / time	22-Aug-2021 11:19	22-Aug-2021 11:30	22-Aug-2021 15:13	22-Aug-2021 15:14	24-Aug-2021 10:48
Compound	CAS Number	LOR	Unit	EP2109734-023	EP2109734-024	EP2109734-025	EP2109734-026	EP2109734-062
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.88	7.79	8.19	8.39	8.03
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	1.53	1.44	2.34	2.44	2.66
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	777	736	958	963	794
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	10	mg/L	505	478	623	626	516
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	282	276	293	281	170
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	6	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	306	271	177	135	163
Total Alkalinity as CaCO3	----	1	mg/L	306	271	177	140	163
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	26	38	179	179	34
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	72	67	101	106	107
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	52	51	48	40	32
Magnesium	7439-95-4	1	mg/L	37	36	42	44	22
Sodium	7440-23-5	1	mg/L	59	55	92	94	80
Potassium	7440-09-7	1	mg/L	11	11	12	13	21
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	28.7	27.2	12.1	5.7	29.1
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	0.3	0.3	0.3	0.2
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	8.69	8.10	10.1	9.51	6.98
ø Total Cations	----	0.01	meq/L	8.49	8.18	10.2	10.0	7.42
ø Ionic Balance	----	0.01	%	1.16	0.53	0.24	2.68	3.06
EP231A: Perfluoroalkyl Sulfonic Acids								

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SW022	SW021	SW019	SW020	SPRINKLER SF1
				Sampling date / time	22-Aug-2021 11:19	22-Aug-2021 11:30	22-Aug-2021 15:13	22-Aug-2021 15:14	24-Aug-2021 10:48
					EP2109734-023	EP2109734-024	EP2109734-025	EP2109734-026	EP2109734-062
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0016	<0.0016	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0261**	**0.0115**	**0.131**	**0.130**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0827**	**0.0339**	**0.373**	**0.334**	**0.0188**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0072**	**0.0026**	**0.0880**	**0.0877**	**0.0006**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.160**	**0.104**	**7.50**	**6.38**	**0.0126**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0018**	<0.0016	**0.0036**	**0.0037**	**0.0008**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0016	<0.0016	**0.0008**	**0.0018**	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0016	<0.0016	**0.0010**	**0.0013**	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0040	<0.0040	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.004	<0.004	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.004	<0.004	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW022	SW021	SW019	SW020	SPRINKLER SF1
				Sampling date / time	22-Aug-2021 11:19	22-Aug-2021 11:30	22-Aug-2021 15:13	22-Aug-2021 15:14	24-Aug-2021 10:48
Compound	CAS Number	LOR	Unit		EP2109734-023	EP2109734-024	EP2109734-025	EP2109734-026	EP2109734-062
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.004	<0.004	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.004	<0.004	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0016	<0.0016	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.002	<0.002	**0.002**	**0.002**	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**2.71**	**2.01**	**6.01**	**1.34**	**0.003**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.008**	**0.005**	**0.011**	**0.010**	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.002	<0.002	**0.002**	**0.002**	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0016	<0.0016	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**3.00**	**2.17**	**14.1**	**8.28**	**0.0358**
^ Sum of PFAS	----	0.0002	µg/L		**3.00**	**2.17**	**14.1**	**8.29**	**0.0358**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**75.0**	**93.0**	**96.3**	**101**	**97.9**
13C8-PFOA	----	0.0005	%		**86.0**	**88.0**	**96.8**	**96.4**	**93.5**

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW001	----	----	----	----
				Sampling date / time	24-Aug-2021 13:13	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2109734-064	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.00	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR)									
^ Sodium Adsorption Ratio	----	0.01	-		2.66	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		790	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	10	mg/L		514	----	----	----	----
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		170	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		158	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		158	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		34	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		108	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		32	----	----	----	----
Magnesium	7439-95-4	1	mg/L		22	----	----	----	----
Sodium	7440-23-5	1	mg/L		80	----	----	----	----
Potassium	7440-09-7	1	mg/L		21	----	----	----	----
EG052F: Dissolved Silica by ICPAES									
Silicon as SiO2	14464-46-1	0.1	mg/L		29.6	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.2	----	----	----	----
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		6.91	----	----	----	----
ø Total Cations	----	0.01	meq/L		7.42	----	----	----	----
ø Ionic Balance	----	0.01	%		3.58	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW001	----	----	----	----
				Sampling date / time	24-Aug-2021 13:13	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2109734-064	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0200**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0005**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0094**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0008**	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	SW001	----	----	----	----
				Sampling date / time	24-Aug-2021 13:13	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2109734-064	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.001**	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	----	----	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0317**	----	----	----	----
^ Sum of PFAS	----	0.0002	µg/L		**0.0317**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**104**	----	----	----	----
13C8-PFOA	----	0.0005	%		**98.1**	----	----	----	----

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	QC113	QC114	QC118	QC119	QC124
				Sampling date / time	21-Aug-2021 17:13	21-Aug-2021 17:14	22-Aug-2021 17:22	22-Aug-2021 17:22	23-Aug-2021 15:31
					EP2109734-021	EP2109734-022	EP2109734-051	EP2109734-052	EP2109734-056
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	QC113	QC114	QC118	QC119	QC124
				Sampling date / time	21-Aug-2021 17:13	21-Aug-2021 17:14	22-Aug-2021 17:22	22-Aug-2021 17:22	23-Aug-2021 15:31
					EP2109734-021	EP2109734-022	EP2109734-051	EP2109734-052	EP2109734-056
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**89.2**	**93.1**	**96.8**	**98.4**	**94.8**
13C8-PFOA	----	0.0005	%		**92.5**	**94.7**	**103**	**102**	**98.7**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	QC123	POOL SF2	QC128	QC129	TBW739
				Sampling date / time	23-Aug-2021 15:32	24-Aug-2021 11:21	24-Aug-2021 13:30	24-Aug-2021 13:31	19-Aug-2021 00:00
					EP2109734-057	EP2109734-063	EP2109734-065	EP2109734-066	EP2109734-067
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	**9.35**	----	----	----
EA006: Sodium Adsorption Ratio (SAR)									
^ **Sodium Adsorption Ratio**	----	0.01	-		----	**5.09**	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		----	**953**	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	10	mg/L		----	**619**	----	----	----
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		----	**116**	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		----	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		----	**71**	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		----	**97**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		----	**168**	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		----	**41**	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		----	**200**	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		----	**30**	----	----	----
Magnesium	7439-95-4	1	mg/L		----	**10**	----	----	----
Sodium	7440-23-5	1	mg/L		----	**126**	----	----	----
Potassium	7440-09-7	1	mg/L		----	**31**	----	----	----
EG052F: Dissolved Silica by ICPAES									
Silicon as SiO2	14464-46-1	0.1	mg/L		----	**9.6**	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	**0.3**	----	----	----
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		----	**9.85**	----	----	----
ø **Total Cations**	----	0.01	meq/L		----	**8.59**	----	----	----
ø **Ionic Balance**	----	0.01	%		----	**6.82**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC123	POOL SF2	QC128	QC129	TBW739
			Sampling date / time	23-Aug-2021 15:32	24-Aug-2021 11:21	24-Aug-2021 13:30	24-Aug-2021 13:31	19-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	EP2109734-057	EP2109734-063	EP2109734-065	EP2109734-066	EP2109734-067
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	**0.0340**	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	**0.0023**	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	**0.0284**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	**0.0051**	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	QC123	POOL SF2	QC128	QC129	TBW739
				Sampling date / time	23-Aug-2021 15:32	24-Aug-2021 11:21	24-Aug-2021 13:30	24-Aug-2021 13:31	19-Aug-2021 00:00
					EP2109734-057	EP2109734-063	EP2109734-065	EP2109734-066	EP2109734-067
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	**0.002**	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	**0.0718**	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	**0.0718**	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**95.0**	**102**	**98.1**	**100**	**97.0**
13C8-PFOA	----	0.0005	%		**100**	**95.9**	**98.9**	**99.5**	**94.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TBW740	TBW745	TBW744	TBW746	TBW747
				Sampling date / time	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		EP2109734-068	EP2109734-069	EP2109734-070	EP2109734-071	EP2109734-072
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	TBW740	TBW745	TBW744	TBW746	TBW747
				Sampling date / time	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00
					EP2109734-068	EP2109734-069	EP2109734-070	EP2109734-071	EP2109734-072
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**99.4**	**103**	**103**	**94.1**	**104**
13C8-PFOA	----	0.0005	%		**97.3**	**101**	**96.9**	**93.9**	**100**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC102	QC103	----	----	----
				Sampling date / time	19-Aug-2021 00:00	19-Aug-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EP2109734-073	EP2109734-074	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC102	QC103	----	----	----
				Sampling date / time	19-Aug-2021 00:00	19-Aug-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EP2109734-073	EP2109734-074	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	----	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	----	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	----	----	----
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**102**	**102**	----	----	----
13C8-PFOA	----	0.0005	%		**99.7**	**97.6**	----	----	----

Surrogate Control Limits

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

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

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

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

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP231B: Perfluoroalkyl Carboxylic Acids

(WATER) EP231P: PFAS Sums

(WATER) EP231S: PFAS Surrogate

(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids

(WATER) EP231C: Perfluoroalkyl Sulfonamides

(WATER) EP231A: Perfluoroalkyl Sulfonic Acids

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EP2109734**	Page	: 1 of 13
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021
Order number	: CW1173100	Date Analysis Commenced	: 03-Sep-2021
C-O-C number	: 26151	Issue Date	: 14-Sep-2021
Sampler	: Mark Harris, Mickayla Graham		
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Quote number	: EP/726/21		
No. of samples received	: 74		
No. of samples analysed	: 74		

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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
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.

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 (%)
EA005P: pH by PC Titrator (QC Lot: 3883345)									
EP2109734-002	SW003	EA005-P: pH Value	----	0.01	pH Unit	8.44	8.42	0.2	0% - 20%
EP2109734-013	QC105	EA005-P: pH Value	----	0.01	pH Unit	8.34	8.34	0.0	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 3883349)									
EP2109734-027	HGA0040P	EA005-P: pH Value	----	0.01	pH Unit	8.06	8.10	0.5	0% - 20%
EP2109734-037	HGC0253	EA005-P: pH Value	----	0.01	pH Unit	7.84	7.83	0.1	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 3883353)									
EP2109734-047	HGE0201	EA005-P: pH Value	----	0.01	pH Unit	7.96	8.00	0.5	0% - 20%
EP2109734-062	SPRINKLER SF1	EA005-P: pH Value	----	0.01	pH Unit	8.03	8.05	0.2	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 3883348)									
EP2109734-002	SW003	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	627	630	0.5	0% - 20%
EP2109734-013	QC105	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	635	646	1.7	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 3883352)									
EP2109734-027	HGA0040P	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	653	656	0.5	0% - 20%
EP2109734-037	HGC0253	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	635	640	0.8	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 3883356)									
EP2109734-047	HGE0201	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	671	676	0.7	0% - 20%
EP2109734-062	SPRINKLER SF1	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	794	800	0.8	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3883347)									
EP2109734-002	SW003	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	12	10	19.8	0% - 50%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	188	180	4.5	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	200	190	5.4	0% - 20%
EP2109734-013	QC105	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<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 (%)*
ED037P: Alkalinity by PC Titrator (QC Lot: 3883347) - continued									
EP2109734-013	QC105	ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	5	4	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	196	198	0.9	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	201	203	0.8	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3883351)									
EP2109734-027	HGA0040P	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	225	222	1.1	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	225	222	1.1	0% - 20%
EP2109734-037	HGC0253	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	222	218	1.9	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	222	218	1.9	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3883355)									
EP2109734-047	HGE0201	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	194	189	2.6	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	194	189	2.6	0% - 20%
EP2109734-062	SPRINKLER SF1	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	163	161	0.8	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	163	161	0.8	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3881198)									
EP2109734-001	QC101	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	44	44	0.0	0% - 20%
EP2109734-013	QC105	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	46	45	0.0	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3881201)									
EP2109734-027	HGA0040P	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	46	45	0.0	0% - 20%
EP2109734-037	HGC0253	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	42	44	3.5	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3881217)									
EP2109734-047	HGE0201	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	45	46	0.0	0% - 20%
EP2109734-061	HGSL0038P	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	43	42	3.1	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3881200)									
EP2109734-001	QC101	ED045G: Chloride	16887-00-6	1	mg/L	53	54	0.0	0% - 20%
EP2109734-013	QC105	ED045G: Chloride	16887-00-6	1	mg/L	51	52	2.8	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3881203)									
EP2109734-027	HGA0040P	ED045G: Chloride	16887-00-6	1	mg/L	52	51	0.0	0% - 20%
EP2109734-037	HGC0253	ED045G: Chloride	16887-00-6	1	mg/L	55	56	0.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3881219)									
EP2109734-047	HGE0201	ED045G: Chloride	16887-00-6	1	mg/L	53	53	0.0	0% - 20%
EP2109734-061	HGSL0038P	ED045G: Chloride	16887-00-6	1	mg/L	51	52	0.0	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 (%)*
ED093F: Dissolved Major Cations (QC Lot: 3882700)									
EP2109734-001	QC101	ED093F: Calcium	7440-70-2	1	mg/L	43	43	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	33	33	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	35	36	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	10	10	0.0	0% - 50%
EP2109734-013	QC105	ED093F: Calcium	7440-70-2	1	mg/L	46	46	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	33	33	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	35	35	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	10	10	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 3882701)									
EP2109734-027	HGA0040P	ED093F: Calcium	7440-70-2	1	mg/L	50	50	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	33	34	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	34	35	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	10	10	0.0	0% - 50%
EP2109734-037	HGC0253	ED093F: Calcium	7440-70-2	1	mg/L	43	44	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	30	30	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	37	38	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	9	9	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 3882704)									
EP2109734-047	HGE0201	ED093F: Calcium	7440-70-2	1	mg/L	49	46	6.5	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	36	34	5.4	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	36	35	3.7	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	10	10	0.0	0% - 50%
EP2109734-061	HGSL0038P	ED093F: Calcium	7440-70-2	1	mg/L	46	46	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	32	32	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	33	33	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	9	9	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 3883346)									
EP2109734-002	SW003	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.0	No Limit
EP2109734-013	QC105	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 3883350)									
EP2109734-027	HGA0040P	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.0	No Limit
EP2109734-037	HGC0253	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 3883354)									
EP2109734-047	HGE0201	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.0	No Limit
EP2109734-062	SPRINKLER SF1	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	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
EA005P: pH by PC Titrator (QCLot: 3883345)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.5	102
				----	7 pH Unit	100	98.5	102
EA005P: pH by PC Titrator (QCLot: 3883349)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.5	102
				----	7 pH Unit	100	98.5	102
EA005P: pH by PC Titrator (QCLot: 3883353)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.5	102
				----	7 pH Unit	100	98.5	102
EA010P: Conductivity by PC Titrator (QCLot: 3883348)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.9	92.1	105
EA010P: Conductivity by PC Titrator (QCLot: 3883352)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.1	92.1	105
EA010P: Conductivity by PC Titrator (QCLot: 3883356)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	98.1	92.1	105
ED037P: Alkalinity by PC Titrator (QCLot: 3883347)								
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	102	81.2	126
				<1	200 mg/L	101	90.0	110
ED037P: Alkalinity by PC Titrator (QCLot: 3883351)								
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	104	81.2	126
				<1	200 mg/L	102	90.0	110
ED037P: Alkalinity by PC Titrator (QCLot: 3883355)								
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----

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
ED037P: Alkalinity by PC Titrator (QCLot: 3883355) - continued								
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	106	81.2	126
				<1	200 mg/L	101	90.0	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3881198)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.5	87.7	113
				<1	500 mg/L	97.0	87.7	113
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3881201)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	87.7	113
				<1	500 mg/L	102	87.7	113
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3881217)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	99.6	87.7	113
				<1	500 mg/L	100	87.7	113
ED045G: Chloride by Discrete Analyser (QCLot: 3881200)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.1	87.9	114
				<1	1000 mg/L	102	87.9	114
ED045G: Chloride by Discrete Analyser (QCLot: 3881203)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	98.6	87.9	114
				<1	1000 mg/L	103	87.9	114
ED045G: Chloride by Discrete Analyser (QCLot: 3881219)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.0	87.9	114
				<1	1000 mg/L	105	87.9	114
ED093F: Dissolved Major Cations (QCLot: 3882700)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	100	85.9	113
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	97.1	88.0	110
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	105	87.3	118
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	94.6	89.7	108
ED093F: Dissolved Major Cations (QCLot: 3882701)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.4	85.9	113
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	93.6	88.0	110
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	102	87.3	118
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	90.9	89.7	108
ED093F: Dissolved Major Cations (QCLot: 3882704)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.2	85.9	113
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	96.8	88.0	110
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	101	87.3	118
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	89.9	89.7	108
EK040P: Fluoride by PC Titrator (QCLot: 3883346)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	98.6	86.0	116

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
EK040P: Fluoride by PC Titrator (QCLot: 3883350)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	94.4	86.0	116
EK040P: Fluoride by PC Titrator (QCLot: 3883354)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	92.2	86.0	116
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3886203)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	77.2	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	73.2	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	80.0	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	76.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3888161)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	84.0	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	78.0	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	75.6	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	83.2	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	83.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3889063)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	91.2	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	79.2	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	120	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	82.4	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3889553)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	76.0	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	81.2	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	82.4	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	76.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890814)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	80.8	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	84.8	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	86.0	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	69.6	53.0	142

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: 3886203)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	82.0	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	82.0	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	80.4	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	99.2	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	82.8	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	80.8	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	93.9	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3888161)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	77.4	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	75.6	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	77.6	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	80.4	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	92.0	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	89.6	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	90.8	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	110	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	82.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3889063)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	79.5	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	90.8	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	74.0	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	76.4	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	91.2	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	80.8	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	97.6	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	88.8	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	97.9	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3889553)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	81.8	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	85.2	72.0	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: 3889553) - continued								
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	88.8	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	89.6	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	84.8	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	91.2	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	80.8	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	84.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890814)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	83.8	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	88.4	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	93.2	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	78.4	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	88.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3886203)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	78.4	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	84.5	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	90.1	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	83.4	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	73.9	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	92.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3888161)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	74.0	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	74.7	68.0	141

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: 3888161) - continued								
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	70.2	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	81.1	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	70.4	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3889063)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	85.2	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	102	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	87.5	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	81.4	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	91.8	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	104	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	98.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3889553)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	82.8	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	90.4	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	87.0	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	80.0	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	90.6	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	88.8	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890814)								

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: 3890814) - continued								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	84.8	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	97.1	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	93.1	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	94.9	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	87.4	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	92.0	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3886203)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	74.0	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	76.4	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	99.6	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	80.0	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3888161)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	75.2	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	75.6	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	76.0	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	98.0	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3889063)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	82.4	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	75.2	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	94.8	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	76.4	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3889553)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	113	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	84.8	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	90.8	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	84.4	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890814)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	85.6	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	100	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	82.8	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	73.2	60.9	136

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231P: PFAS Sums (QCLot: 3886203)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3888161)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3889063)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3889553)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3890814)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----

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
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3881198)							
EP2109734-001	QC101	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	102	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3881201)							
EP2109734-027	HGA0040P	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	106	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3881217)							
EP2109734-047	HGE0201						

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3881217) - continued							
EP2109734-047	HGE0201	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	90.8	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3881200)							
EP2109734-001	QC101	ED045G: Chloride	16887-00-6	1000 mg/L	99.9	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3881203)							
EP2109734-027	HGA0040P	ED045G: Chloride	16887-00-6	1000 mg/L	106	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3881219)							
EP2109734-047	HGE0201	ED045G: Chloride	16887-00-6	1000 mg/L	99.4	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 3883346)							
EP2109734-003	SW004	EK040P: Fluoride	16984-48-8	4.9 mg/L	89.2	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 3883350)							
EP2109734-028	HGA0041P	EK040P: Fluoride	16984-48-8	4.9 mg/L	89.8	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 3883354)							
EP2109734-048	HGE0192	EK040P: Fluoride	16984-48-8	4.9 mg/L	85.5	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2109734**	Page	: 1 of 27
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)	Issue Date	: 14-Sep-2021
Sampler	: Mark Harris, Mickayla Graham	No. of samples received	: 74
Order number	: CW1173100	No. of samples analysed	: 74

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

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
QC101, SW003, SW004, SW005	----	----	----	03-Sep-2021	19-Aug-2021	**15**
Clear Plastic Bottle - Natural						
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	----	----	----	03-Sep-2021	20-Aug-2021	**14**
Clear Plastic Bottle - Natural						
GF0964R, GF0965R, PSA0598R, SF2203R	----	----	----	03-Sep-2021	21-Aug-2021	**13**
Clear Plastic Bottle - Natural						
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	----	----	----	03-Sep-2021	22-Aug-2021	**12**
Clear Plastic Bottle - Natural						
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	----	----	----	03-Sep-2021	24-Aug-2021	**10**
EA006: Sodium Adsorption Ratio (SAR)						
Clear Plastic Bottle - Natural						
QC101, SW003, SW004, SW005	----	----	----	03-Sep-2021	26-Aug-2021	**8**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA006: Sodium Adsorption Ratio (SAR) - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural						
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	----	----	----	03-Sep-2021	27-Aug-2021	**7**
Clear Plastic Bottle - Natural						
GF0964R, GF0965R, PSA0598R, SF2203R	----	----	----	03-Sep-2021	28-Aug-2021	**6**
Clear Plastic Bottle - Natural						
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	----	----	----	03-Sep-2021	29-Aug-2021	**5**
Clear Plastic Bottle - Natural						
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	----	----	----	03-Sep-2021	31-Aug-2021	**3**
EA065: Total Hardness as CaCO3						
Clear Plastic Bottle - Natural						
QC101, SW003, SW004, SW005	----	----	----	03-Sep-2021	26-Aug-2021	**8**
Clear Plastic Bottle - Natural						
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	----	----	----	03-Sep-2021	27-Aug-2021	**7**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA065: Total Hardness as CaCO3 - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural						
GF0964R, GF0965R, PSA0598R, SF2203R	----	----	----	03-Sep-2021	28-Aug-2021	**6**
Clear Plastic Bottle - Natural						
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	----	----	----	03-Sep-2021	29-Aug-2021	**5**
Clear Plastic Bottle - Natural						
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	----	----	----	03-Sep-2021	31-Aug-2021	**3**
ED037P: Alkalinity by PC Titrator						
Clear Plastic Bottle - Natural						
QC101, SW003, SW004, SW005	----	----	----	03-Sep-2021	02-Sep-2021	**1**
ED093F: Dissolved Major Cations						
Clear Plastic Bottle - Natural						
QC101, SW003, SW004, SW005	----	----	----	03-Sep-2021	26-Aug-2021	**8**
Clear Plastic Bottle - Natural						
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	----	----	----	03-Sep-2021	27-Aug-2021	**7**
Clear Plastic Bottle - Natural						
GF0964R, GF0965R, PSA0598R, SF2203R	----	----	----	03-Sep-2021	28-Aug-2021	**6**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
ED093F: Dissolved Major Cations - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural						
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	----	----	----	03-Sep-2021	29-Aug-2021	**5**
Clear Plastic Bottle - Natural						
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	----	----	----	03-Sep-2021	31-Aug-2021	**3**

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	75	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	75	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.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**03-Sep-2021**	19-Aug-2021	×
Clear Plastic Bottle - Natural (EA005-P)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**03-Sep-2021**	20-Aug-2021	×
Clear Plastic Bottle - Natural (EA005-P)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**03-Sep-2021**	21-Aug-2021	×
Clear Plastic Bottle - Natural (EA005-P)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**03-Sep-2021**	22-Aug-2021	×
Clear Plastic Bottle - Natural (EA005-P)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**03-Sep-2021**	24-Aug-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
EA006: Sodium Adsorption Ratio (SAR)							
Clear Plastic Bottle - Natural (ED093F)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**03-Sep-2021**	26-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**03-Sep-2021**	27-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**03-Sep-2021**	28-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**03-Sep-2021**	29-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**03-Sep-2021**	31-Aug-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
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**03-Sep-2021**	16-Sep-2021	✓
Clear Plastic Bottle - Natural (EA010-P)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**03-Sep-2021**	17-Sep-2021	✓
Clear Plastic Bottle - Natural (EA010-P)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**03-Sep-2021**	18-Sep-2021	✓
Clear Plastic Bottle - Natural (EA010-P)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**03-Sep-2021**	19-Sep-2021	✓
Clear Plastic Bottle - Natural (EA010-P)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**03-Sep-2021**	21-Sep-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
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Natural (ED093F)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**03-Sep-2021**	26-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**03-Sep-2021**	27-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**03-Sep-2021**	28-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**03-Sep-2021**	29-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**03-Sep-2021**	31-Aug-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
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**03-Sep-2021**	02-Sep-2021	×
Clear Plastic Bottle - Natural (ED037-P)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**03-Sep-2021**	03-Sep-2021	✓
Clear Plastic Bottle - Natural (ED037-P)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**03-Sep-2021**	04-Sep-2021	✓
Clear Plastic Bottle - Natural (ED037-P)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**03-Sep-2021**	05-Sep-2021	✓
Clear Plastic Bottle - Natural (ED037-P)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**03-Sep-2021**	07-Sep-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
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**14-Sep-2021**	16-Sep-2021	✓
Clear Plastic Bottle - Natural (ED041G)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**14-Sep-2021**	17-Sep-2021	✓
Clear Plastic Bottle - Natural (ED041G)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**14-Sep-2021**	18-Sep-2021	✓
Clear Plastic Bottle - Natural (ED041G)							
HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**13-Sep-2021**	19-Sep-2021	✓
Clear Plastic Bottle - Natural (ED041G)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148	**22-Aug-2021**	**----**	----	----	**14-Sep-2021**	19-Sep-2021	✓
Clear Plastic Bottle - Natural (ED041G)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**13-Sep-2021**	21-Sep-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
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**14-Sep-2021**	16-Sep-2021	✓
Clear Plastic Bottle - Natural (ED045G)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**14-Sep-2021**	17-Sep-2021	✓
Clear Plastic Bottle - Natural (ED045G)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**14-Sep-2021**	18-Sep-2021	✓
Clear Plastic Bottle - Natural (ED045G)							
HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**13-Sep-2021**	19-Sep-2021	✓
Clear Plastic Bottle - Natural (ED045G)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148	**22-Aug-2021**	**----**	----	----	**14-Sep-2021**	19-Sep-2021	✓
Clear Plastic Bottle - Natural (ED045G)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**13-Sep-2021**	21-Sep-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
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**03-Sep-2021**	26-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**03-Sep-2021**	27-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**03-Sep-2021**	28-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**03-Sep-2021**	29-Aug-2021	×
Clear Plastic Bottle - Natural (ED093F)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**03-Sep-2021**	31-Aug-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
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P)							
QC101, SW003, SW004, SW005	**19-Aug-2021**	**----**	----	----	**03-Sep-2021**	16-Sep-2021	✓
Clear Plastic Bottle - Natural (EK040P)							
SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006	**20-Aug-2021**	**----**	----	----	**03-Sep-2021**	17-Sep-2021	✓
Clear Plastic Bottle - Natural (EK040P)							
GF0964R, GF0965R, PSA0598R, SF2203R	**21-Aug-2021**	**----**	----	----	**03-Sep-2021**	18-Sep-2021	✓
Clear Plastic Bottle - Natural (EK040P)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC120, QC121, QC122	**22-Aug-2021**	**----**	----	----	**03-Sep-2021**	19-Sep-2021	✓
Clear Plastic Bottle - Natural (EK040P)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P, HGSL0038P, SPRINKLER SF1, POOL SF2, SW001	**24-Aug-2021**	**----**	----	----	**03-Sep-2021**	21-Sep-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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-SUT)							
QC101, SW003, SW004, SW005, SW018	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**08-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW739, TBW740, TBW745, TBW744, TBW746, TBW747, QC102, QC103	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW023, SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006, QC107, QC108	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**08-Sep-2021**	16-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
GF0964R, GF0965R, PSA0598R, SF2203R, QC113, QC114	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**08-Sep-2021**	17-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC118, QC119, QC120, QC121, QC122	**22-Aug-2021**	**08-Sep-2021**	18-Feb-2022	✓	**08-Sep-2021**	18-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC124, QC123	**23-Aug-2021**	**08-Sep-2021**	19-Feb-2022	✓	**08-Sep-2021**	19-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**08-Sep-2021**	20-Feb-2022	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued							
HDPE (no PTFE) (EP231X-SUT)							
HGSL0038P, SPRINKLER SF1, POOL SF2, SW001, QC128, QC129	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**09-Sep-2021**	20-Feb-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-SUT)							
QC101, SW003, SW004, SW005, SW018	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**08-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW739, TBW740, TBW745, TBW744, TBW746, TBW747, QC102, QC103	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW023, SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006, QC107, QC108	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**08-Sep-2021**	16-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
GF0964R, GF0965R, PSA0598R, SF2203R, QC113, QC114	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**08-Sep-2021**	17-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC118, QC119, QC120, QC121, QC122	**22-Aug-2021**	**08-Sep-2021**	18-Feb-2022	✓	**08-Sep-2021**	18-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC124, QC123	**23-Aug-2021**	**08-Sep-2021**	19-Feb-2022	✓	**08-Sep-2021**	19-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**08-Sep-2021**	20-Feb-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 - Continued							
HDPE (no PTFE) (EP231X-SUT)							
HGSL0038P, SPRINKLER SF1, POOL SF2, SW001, QC128, QC129	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**09-Sep-2021**	20-Feb-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-SUT) QC101, SW003, SW004, SW005, SW018	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**08-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT) TBW739, TBW740, TBW745, TBW744, TBW746, TBW747, QC102, QC103	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT) SW023, SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006, QC107, QC108	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**08-Sep-2021**	16-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT) GF0964R, GF0965R, PSA0598R, SF2203R, QC113, QC114	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**08-Sep-2021**	17-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT) SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC118, QC119, QC120, QC121, QC122	**22-Aug-2021**	**08-Sep-2021**	18-Feb-2022	✓	**08-Sep-2021**	18-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT) QC124, QC123	**23-Aug-2021**	**08-Sep-2021**	19-Feb-2022	✓	**08-Sep-2021**	19-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT) HNPIAC0001P, HNPIAC0002P, HGSL0014P	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**08-Sep-2021**	20-Feb-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 - Continued							
HDPE (no PTFE) (EP231X-SUT)							
HGSL0038P, POOL SF2, QC128, SPRINKLER SF1, SW001, QC129	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**09-Sep-2021**	20-Feb-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-SUT)							
QC101, SW003, SW004, SW005, SW018	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**08-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW739, TBW740, TBW745, TBW744, TBW746, TBW747, QC102, QC103	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW023, SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006, QC107, QC108	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**08-Sep-2021**	16-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
GF0964R, GF0965R, PSA0598R, SF2203R, QC113, QC114	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**08-Sep-2021**	17-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC118, QC119, QC120, QC121, QC122	**22-Aug-2021**	**08-Sep-2021**	18-Feb-2022	✓	**08-Sep-2021**	18-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC124, QC123	**23-Aug-2021**	**08-Sep-2021**	19-Feb-2022	✓	**08-Sep-2021**	19-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**08-Sep-2021**	20-Feb-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 - Continued							
HDPE (no PTFE) (EP231X-SUT)							
HGSL0038P, POOL SF2, QC128, SPRINKLER SF1, SW001, QC129	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**09-Sep-2021**	20-Feb-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-SUT)							
QC101, SW003, SW004, SW005, SW018	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**08-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW739, TBW740, TBW745, TBW744, TBW746, TBW747, QC102, QC103	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	15-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW023, SW010, SW009, SW017, SW016, SW011, SW012, QC105, SW006, QC107, QC108	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**08-Sep-2021**	16-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
GF0964R, GF0965R, PSA0598R, SF2203R, QC113, QC114	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**08-Sep-2021**	17-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SW022, SW021, SW019, SW020, HGA0040P, HGA0041P, HGA0062P, HGA0065P, HGA0070P, HGA0074P, HGA0077, HGC0163, HGC0165, HGC0244, HGC0253, HGC0265, HGC0189, HGC0200, HGC0213, HGC0202, HGC0233, HGE0243, HGE0246, HGE0148, HGE0201, HGE0192, HGE0226, HGE0252, QC118, QC119, QC120, QC121, QC122	**22-Aug-2021**	**08-Sep-2021**	18-Feb-2022	✓	**08-Sep-2021**	18-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC124, QC123	**23-Aug-2021**	**08-Sep-2021**	19-Feb-2022	✓	**08-Sep-2021**	19-Feb-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
HNPIAC0001P, HNPIAC0002P, HGSL0014P	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**08-Sep-2021**	20-Feb-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 - Continued							
HDPE (no PTFE) (EP231X-SUT)							
HGSL0038P, SPRINKLER SF1, POOL SF2, SW001, QC128, QC129	**24-Aug-2021**	**08-Sep-2021**	20-Feb-2022	✓	**09-Sep-2021**	20-Feb-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)							
Alkalinity by PC Titrator	ED037-P	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	75	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	5	75	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	5	75	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	75	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	60	**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
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Calculated TDS (from Electrical Conductivity)	EA016	WATER	In house: Calculation from Electrical Conductivity (APHA 2510 B) using a conversion factor specified in the analytical report. This method is compliant with NEPM Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA seal method 2 017-1-L
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Silica (Total Dissolved) by ICPAES	EG052F	WATER	In house: Referenced to APHA 4500-SiO2. Silica (Total) determined by calculation from Silicon by ICPAES.
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions

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#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 9.45 1/9/21	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
1	001	QC104		19/08/2021 08:38 AM	Soil	ALS: 2 Non ALS: 0	No		X		
2	002	SD002		19/08/2021 08:41 AM	Soil	ALS: 2 Non ALS: 0	No		X		
3	003	SD003		19/08/2021 10:18 AM	Soil	ALS: 2 Non ALS: 0	No		X		
4	004	SD004		19/08/2021 11:02 AM	Soil	ALS: 2 Non ALS: 0	No		X		
5	005	SD017		19/08/2021 04:59 PM	Soil	ALS: 2 Non ALS: 0	No		X		
6	006	SD025		20/08/2021 08:20 AM	Soil	ALS: 2 Non ALS: 0	No		X		
7	007	SD009		20/08/2021 10:52 AM	Soil	ALS: 2 Non ALS: 0	No		X		
8	008	SD008		20/08/2021 10:56 AM	Soil	ALS: 2 Non ALS: 0	No		X		
9	009	SD016		20/08/2021 11:14 AM	Soil	ALS: 2 Non ALS: 0	No		X		

Environmental Division
Perth
Work Order Reference
EP2110221

Telephone : +61-8-9406 1301

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
10 010	SD015		20/08/2021 12:11 PM	Soil	ALS: 2 Non ALS: 0	No		X		
11 011	SD011		20/08/2021 02:36 PM	Soil	ALS: 2 Non ALS: 0	No		X		
12 012	QC106		20/08/2021 02:37 PM	Soil	ALS: 2 Non ALS: 0	No		X		
13 013	SD010		20/08/2021 02:55 PM	Soil	ALS: 2 Non ALS: 0	No		X		
14 014	SD005		20/08/2021 03:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
15 015	SD012		20/08/2021 03:21 PM	Soil	ALS: 2 Non ALS: 0	No		X		
16 016	SD013		20/08/2021 03:24 PM	Soil	ALS: 2 Non ALS: 0	No		X		
17 017	SD014		20/08/2021 03:42 PM	Soil	ALS: 2 Non ALS: 0	No		X		
18 018	SD007		20/08/2021 03:44 PM	Soil	ALS: 2 Non ALS: 0	No		X		

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SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
19 019	SD006		20/08/2021 03:45 PM	Soil	ALS: 2 Non ALS: 0	No		X		
20 020	SS001		20/08/2021 05:27 PM	Soil	ALS: 2 Non ALS: 0	No		X		
21 021	SS002		20/08/2021 05:28 PM	Soil	ALS: 2 Non ALS: 0	No		X		
22 022	SS003		20/08/2021 05:29 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
23 023	SS004		20/08/2021 05:38 PM	Soil	ALS: 2 Non ALS: 0	No		X		
24 024	SS005		20/08/2021 05:39 PM	Soil	ALS: 2 Non ALS: 0	No		X		
25 025	SS006		20/08/2021 05:40 PM	Soil	ALS: 2 Non ALS: 0	No		X		
26 026	SS007		20/08/2021 05:44 PM	Soil	ALS: 2 Non ALS: 0	No		X		
27 027	SS008		20/08/2021 05:45 PM	Soil	ALS: 2 Non ALS: 0	No		X		

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SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
28 028	SS009		20/08/2021 05:46 PM	Soil	ALS: 2 Non ALS: 0	No		X		
29 029	SS010		20/08/2021 05:47 PM	Soil	ALS: 2 Non ALS: 0	No		X		
30 030	SS011		20/08/2021 05:48 PM	Soil	ALS: 2 Non ALS: 0	No		X		
31 031	SS012		20/08/2021 05:48 PM	Soil	ALS: 2 Non ALS: 0	No		X		
32 032	SS013		20/08/2021 05:49 PM	Soil	ALS: 2 Non ALS: 0	No		X		
33 033	SS014		20/08/2021 05:51 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
34 034	SS015		20/08/2021 05:52 PM	Soil	ALS: 2 Non ALS: 0	No		X		
35 035	SS016		20/08/2021 05:53 PM	Soil	ALS: 2 Non ALS: 0	No		X		
36 036	SS040		21/08/2021 08:20 AM	Soil	ALS: 2 Non ALS: 0	No		X		

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SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
37 037	QC109		21/08/2021 08:23 AM	Soil	ALS: 2 Non ALS: 0	No		X		
38 038	SS043		21/08/2021 08:32 AM	Soil	ALS: 2 Non ALS: 0	No		X		
39 039	SS041		21/08/2021 08:42 AM	Soil	ALS: 2 Non ALS: 0	No		X		
40 040	SS042		21/08/2021 08:42 AM	Soil	ALS: 2 Non ALS: 0	No		X		
41 041	SS048		21/08/2021 09:53 AM	Soil	ALS: 2 Non ALS: 0	No		X		
42 042	SS050		21/08/2021 09:54 AM	Soil	ALS: 2 Non ALS: 0	No		X		
43 043	SS049		21/08/2021 09:57 AM	Soil	ALS: 2 Non ALS: 0	No		X		
44 044	SS051		21/08/2021 10:03 AM	Soil	ALS: 2 Non ALS: 0	No		X		
45 045	SS052		21/08/2021 10:05 AM	Soil	ALS: 2 Non ALS: 0	No		X		

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PRIMARY SAMPLER: Mark Harris

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Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
46 046	SS053		21/08/2021 10:05 AM	Soil	ALS: 2 Non ALS: 0	No		X		
47 047	SS054		21/08/2021 10:08 AM	Soil	ALS: 2 Non ALS: 0	No		X		
48 048	SS055		21/08/2021 10:15 AM	Soil	ALS: 2 Non ALS: 0	No		X		
49 049	SS056		21/08/2021 10:17 AM	Soil	ALS: 2 Non ALS: 0	No	X	X		
50 050	SS057		21/08/2021 10:45 AM	Soil	ALS: 2 Non ALS: 0	No		X		
51 051	QC110		21/08/2021 10:46 AM	Soil	ALS: 2 Non ALS: 0	No		X		
52 052	SS058		21/08/2021 10:48 AM	Soil	ALS: 2 Non ALS: 0	No		X		
53 053	QC111		21/08/2021 01:13 PM	Soil	ALS: 2 Non ALS: 0	No		X		
54 054	QC112		21/08/2021 01:14 PM	Soil	ALS: 2 Non ALS: 0	No		X		

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SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
55 055	SS067		21/08/2021 05:01 PM	Soil	ALS: 2 Non ALS: 0	No		X		
56 056	SS068		21/08/2021 05:16 PM	Soil	ALS: 2 Non ALS: 0	No		X		
57 057	SS069		21/08/2021 05:17 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
58 058	SS070		21/08/2021 05:17 PM	Soil	ALS: 2 Non ALS: 0	No		X		
59 059	SS071		21/08/2021 05:18 PM	Soil	ALS: 2 Non ALS: 0	No		X		
60 060	SS072		21/08/2021 05:19 PM	Soil	ALS: 2 Non ALS: 0	No		X		
61 061	SS073		21/08/2021 05:20 PM	Soil	ALS: 2 Non ALS: 0	No		X		
62 062	SS074		21/08/2021 05:21 PM	Soil	ALS: 2 Non ALS: 0	No		X		
63 063	SS075		21/08/2021 05:21 PM	Soil	ALS: 2 Non ALS: 0	No		X		

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Other comments:

	SAMPLE DETAILS						ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
64 064	SS076		21/08/2021 05:22 PM	Soil	ALS: 2 Non ALS: 0	No		X		
65 065	SS077		21/08/2021 05:23 PM	Soil	ALS: 2 Non ALS: 0	No		X		
66 066	SS078		21/08/2021 05:24 PM	Soil	ALS: 2 Non ALS: 0	No		X		
67 067	SS079		21/08/2021 05:25 PM	Soil	ALS: 2 Non ALS: 0	No		X		
68 068	SS080		21/08/2021 05:26 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
69 069	SS081		21/08/2021 05:28 PM	Soil	ALS: 2 Non ALS: 0	No		X		
70 070	SS082		21/08/2021 05:29 PM	Soil	ALS: 2 Non ALS: 0	No		X		
71 071	QC115		21/08/2021 05:30 PM	Soil	ALS: 2 Non ALS: 0	No		X		
72 072	QC116		21/08/2021 05:30 PM	Soil	ALS: 2 Non ALS: 0	No		X		

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SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~073~~	QC117		22/08/2021 06:37 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~074~~	SS111		22/08/2021 06:39 AM	Soil	ALS: 2 Non ALS: 0	No		X		
075	SS112		22/08/2021 06:40 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~076~~	SS113		22/08/2021 06:40 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~077~~	SS114		22/08/2021 06:41 AM	Soil	ALS: 4 Non ALS: 0	No	X	X		
078	SS062		22/08/2021 10:25 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~079~~	SS059		22/08/2021 10:28 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~080~~	SS060		22/08/2021 10:29 AM	Soil	ALS: 2 Non ALS: 0	No		X		
081	SS061		22/08/2021 10:31 AM	Soil	ALS: 2 Non ALS: 0	No		X		

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SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~082~~	SS066		22/08/2021 10:32 AM	Soil	ALS: 2 Non ALS: 0	No		X		
083	SS063		22/08/2021 10:34 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~084~~	SS064		22/08/2021 10:36 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~085~~	SS065		22/08/2021 10:39 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~086~~	SS084		22/08/2021 11:21 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~087~~	SD Pond 2		22/08/2021 11:22 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~088~~	SD Pond 1		22/08/2021 11:32 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~089~~	SS083		22/08/2021 11:33 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~090~~	SS085		22/08/2021 11:34 AM	Soil	ALS: 2 Non ALS: 0	No		X		

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~~091~~	SS086		22/08/2021 11:36 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~092~~	SS099		22/08/2021 02:33 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~093~~	SS101		22/08/2021 02:38 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~094~~	SS102		22/08/2021 02:40 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~095~~	SS100		22/08/2021 02:41 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~096~~	SS115		22/08/2021 03:04 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~097~~	SS116		22/08/2021 03:04 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~098~~	SS117		22/08/2021 03:05 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~099~~	SS118		22/08/2021 03:06 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		

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SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~100~~	SD021		22/08/2021 03:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~101~~	SD022		22/08/2021 03:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~102~~	SS120		23/08/2021 01:46 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~103~~	SS119		23/08/2021 01:47 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~104~~	SS121		23/08/2021 01:49 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~105~~	SS122		23/08/2021 01:50 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~106~~	SS017		23/08/2021 03:55 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~107~~	SS018		23/08/2021 03:56 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~108~~	SS020		23/08/2021 03:57 PM	Soil	ALS: 2 Non ALS: 0	No		X		

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SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~109~~	SS019		23/08/2021 03:57 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~110~~	SS021		23/08/2021 03:58 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~111~~	SS022		23/08/2021 03:59 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~112~~	SS023		23/08/2021 04:00 PM	Soil	ALS: 2 Non ALS: 0	No		X		
113	SS024		23/08/2021 04:00 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~114~~	SS025		23/08/2021 04:01 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~115~~	SS026		23/08/2021 04:01 PM	Soil	ALS: 2 Non ALS: 0	No		X		
116	SS027		23/08/2021 04:02 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~117~~	QC125		23/08/2021 04:03 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~118~~	SS028		23/08/2021 04:04 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
~~119~~	SS029		23/08/2021 04:06 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~120~~	SS030		23/08/2021 04:06 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~121~~	SS032		23/08/2021 04:07 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~122~~	SS031		23/08/2021 04:07 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~123~~	SS033		23/08/2021 04:08 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~124~~	QC126		23/08/2021 04:09 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~125~~	QC127		23/08/2021 04:10 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~126~~	SS034		23/08/2021 04:10 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

(ALS) COC#: 26152 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE: / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~127~~	SS035		23/08/2021 04:11 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~128~~	SS036		23/08/2021 04:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~129~~	SS037		23/08/2021 04:12 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
~~130~~	SS038		23/08/2021 04:13 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~131~~	SS039		23/08/2021 04:14 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

(ALS) COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	QC104	HDPE Soil Jar	200 mL	00621019043049	Grey	No	
001	QC104	HDPE Soil Jar	200 mL	00621019043115	Grey	No	
002	SD002	HDPE Soil Jar	200 mL	00621019043022	Grey	No	
002	SD002	HDPE Soil Jar	200 mL	00621019042988	Grey	No	
003	SD003	HDPE Soil Jar	200 mL	00621019043003	Grey	No	
003	SD003	HDPE Soil Jar	200 mL	00621019043113	Grey	No	
004	SD004	HDPE Soil Jar	200 mL	00621019042991	Grey	No	
004	SD004	HDPE Soil Jar	200 mL	00621019043001	Grey	No	
005	SD017	HDPE Soil Jar	200 mL	00621019043101	Grey	No	
005	SD017	HDPE Soil Jar	200 mL	00621019043035	Grey	No	
006	SD025	HDPE Soil Jar	200 mL	00621019042845	Grey	No	
006	SD025	HDPE Soil Jar	200 mL	00621019042830	Grey	No	
007	SD009	HDPE Soil Jar	200 mL	00621019042854	Grey	No	
007	SD009	HDPE Soil Jar	200 mL	00621019042880	Grey	No	
008	SD008	HDPE Soil Jar	200 mL	00621019042832	Grey	No	
008	SD008	HDPE Soil Jar	200 mL	00621019042872	Grey	No	
009	SD016	HDPE Soil Jar	200 mL	00621019042861	Grey	No	
009	SD016	HDPE Soil Jar	200 mL	00621019042903	Grey	No	
010	SD015	HDPE Soil Jar	200 mL	00621019042851	Grey	No	
010	SD015	HDPE Soil Jar	200 mL	00621019042839	Grey	No	
011	SD011	HDPE Soil Jar	200 mL	00621019042904	Grey	No	
011	SD011	HDPE Soil Jar	200 mL	00621019042842	Grey	No	
012	QC106	HDPE Soil Jar	200 mL	00621019042860	Grey	No	
012	QC106	HDPE Soil Jar	200 mL	00621019042878	Grey	No	
013	SD010	HDPE Soil Jar	200 mL	00621019042829	Grey	No	
013	SD010	HDPE Soil Jar	200 mL	00621019042954	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 26152 *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

014	SD005	HDPE Soil Jar	200 mL	00621019042877	Grey	No	
014	SD005	HDPE Soil Jar	200 mL	00621019042855	Grey	No	
015	SD012	HDPE Soil Jar	200 mL	00621019042841	Grey	No	
015	SD012	HDPE Soil Jar	200 mL	00621019042828	Grey	No	
016	SD013	HDPE Soil Jar	200 mL	00621019042834	Grey	No	
016	SD013	HDPE Soil Jar	200 mL	00621019042883	Grey	No	
017	SD014	HDPE Soil Jar	200 mL	00621019042871	Grey	No	
017	SD014	HDPE Soil Jar	200 mL	00621019042888	Grey	No	
018	SD007	HDPE Soil Jar	200 mL	00621019042892	Grey	No	
018	SD007	HDPE Soil Jar	200 mL	00621019042867	Grey	No	
019	SD006	HDPE Soil Jar	200 mL	00621019042949	Grey	No	
019	SD006	HDPE Soil Jar	200 mL	00621019042833	Grey	No	
020	SS001	HDPE Soil Jar	200 mL	00621019042909	Grey	No	
020	SS001	HDPE Soil Jar	200 mL	00621019042863	Grey	No	
021	SS002	HDPE Soil Jar	200 mL	00621019042917	Grey	No	
021	SS002	HDPE Soil Jar	200 mL	00621019042935	Grey	No	
022	SS003	HDPE Soil Jar	200 mL	00621019042969	Grey	No	
022	SS003	HDPE Soil Jar	200 mL	00621019042896	Grey	No	
022	SS003	Soil Glass Jar - Unpreserved	150 mL	00260321039270	Orange	No	
022	SS003	Soil Glass Jar - Unpreserved	150 mL	00260321039284	Orange	No	
023	SS004	HDPE Soil Jar	200 mL	00621019042879	Grey	No	
023	SS004	HDPE Soil Jar	200 mL	00621019042890	Grey	No	
024	SS005	HDPE Soil Jar	200 mL	00621019043807	Grey	No	
024	SS005	HDPE Soil Jar	200 mL	00621019043787	Grey	No	
025	SS006	HDPE Soil Jar	200 mL	00621019043758	Grey	No	
025	SS006	HDPE Soil Jar	200 mL	00621019043854	Grey	No	
026	SS007	HDPE Soil Jar	200 mL	00621019043815	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 26152 *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE: / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

026	SS007	HDPE Soil Jar	200 mL	00621019043772	Grey	No	
027	SS008	HDPE Soil Jar	200 mL	00621019043795	Grey	No	
027	SS008	HDPE Soil Jar	200 mL	00621019043747	Grey	No	
028	SS009	HDPE Soil Jar	200 mL	00621019043775	Grey	No	
028	SS009	HDPE Soil Jar	200 mL	00621019043801	Grey	No	
029	SS010	HDPE Soil Jar	200 mL	00621019043846	Grey	No	
029	SS010	HDPE Soil Jar	200 mL	00621019043803	Grey	No	
030	SS011	HDPE Soil Jar	200 mL	00621019043828	Grey	No	
030	SS011	HDPE Soil Jar	200 mL	00621019043818	Grey	No	
031	SS012	HDPE Soil Jar	200 mL	00621019043861	Grey	No	
031	SS012	HDPE Soil Jar	200 mL	00621019043853	Grey	No	
032	SS013	HDPE Soil Jar	200 mL	00621019043879	Grey	No	
032	SS013	HDPE Soil Jar	200 mL	00621019043876	Grey	No	
033	SS014	Soil Glass Jar - Unpreserved	150 mL	00260321039267	Orange	No	
033	SS014	Soil Glass Jar - Unpreserved	150 mL	00260321039268	Orange	No	
033	SS014	HDPE Soil Jar	200 mL	00621019042916	Grey	No	
033	SS014	HDPE Soil Jar	200 mL	00621019042831	Grey	No	
034	SS015	HDPE Soil Jar	200 mL	00621019043850	Grey	No	
034	SS015	HDPE Soil Jar	200 mL	00621019043776	Grey	No	
035	SS016	HDPE Soil Jar	200 mL	00621019043830	Grey	No	
035	SS016	HDPE Soil Jar	200 mL	00621019043738	Grey	No	
036	SS040	HDPE Soil Jar	200 mL	00621019043037	Grey	No	
036	SS040	HDPE Soil Jar	200 mL	00621019043045	Grey	No	
037	QC109	HDPE Soil Jar	200 mL	00621019043114	Grey	No	
037	QC109	HDPE Soil Jar	200 mL	00621019043041	Grey	No	
038	SS043	HDPE Soil Jar	200 mL	00621019043095	Grey	No	
038	SS043	HDPE Soil Jar	200 mL	00621019043058	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE: / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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:

039	SS041	HDPE Soil Jar	200 mL	00621019043077	Grey	No	
039	SS041	HDPE Soil Jar	200 mL	00621019043051	Grey	No	
040	SS042	HDPE Soil Jar	200 mL	00621019043090	Grey	No	
040	SS042	HDPE Soil Jar	200 mL	00621019043069	Grey	No	
041	SS048	HDPE Soil Jar	200 mL	00621019043088	Grey	No	
041	SS048	HDPE Soil Jar	200 mL	00621019043048	Grey	No	
042	SS050	HDPE Soil Jar	200 mL	00621019043106	Grey	No	
042	SS050	HDPE Soil Jar	200 mL	00621019043032	Grey	No	
043	SS049	HDPE Soil Jar	200 mL	00621019043070	Grey	No	
043	SS049	HDPE Soil Jar	200 mL	00621019043072	Grey	No	
044	SS051	HDPE Soil Jar	200 mL	00621019043094	Grey	No	
044	SS051	HDPE Soil Jar	200 mL	00621019043067	Grey	No	
045	SS052	HDPE Soil Jar	200 mL	00621019043052	Grey	No	
045	SS052	HDPE Soil Jar	200 mL	00621019043119	Grey	No	
046	SS053	HDPE Soil Jar	200 mL	00621019043086	Grey	No	
046	SS053	HDPE Soil Jar	200 mL	00621019043122	Grey	No	
047	SS054	HDPE Soil Jar	200 mL	00621019043060	Grey	No	
047	SS054	HDPE Soil Jar	200 mL	00621019043042	Grey	No	
048	SS055	HDPE Soil Jar	200 mL	00621019043079	Grey	No	
048	SS055	HDPE Soil Jar	200 mL	00621019043029	Grey	No	
049	SS056	HDPE Soil Jar	200 mL	00621019043116	Grey	No	
049	SS056	HDPE Soil Jar	200 mL	00621019043109	Grey	No	
050	SS057	HDPE Soil Jar	200 mL	00621019043102	Grey	No	
050	SS057	HDPE Soil Jar	200 mL	00621019043118	Grey	No	
051	QC110	HDPE Soil Jar	200 mL	00621019042846	Grey	No	
051	QC110	HDPE Soil Jar	200 mL	00621019042898	Grey	No	
052	SS058	HDPE Soil Jar	200 mL	00621019043112	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

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EMAIL INVOICES TO: laura.beams@cardno.com.au

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:

052	SS058	HDPE Soil Jar	200 mL	00621019043111	Grey	No	
053	QC111	HDPE Soil Jar	200 mL	00621019042875	Grey	No	
053	QC111	HDPE Soil Jar	200 mL	00621019042843	Grey	No	
054	QC112	HDPE Soil Jar	200 mL	00621019042968	Grey	No	
054	QC112	HDPE Soil Jar	200 mL	00621019042827	Grey	No	
055	SS067	HDPE Soil Jar	200 mL	00621019042942	Grey	No	
055	SS067	HDPE Soil Jar	200 mL	00621019042837	Grey	No	
056	SS068	HDPE Soil Jar	200 mL	00621019042964	Grey	No	
056	SS068	HDPE Soil Jar	200 mL	00621019042921	Grey	No	
057	SS069	HDPE Soil Jar	200 mL	00621019042912	Grey	No	
057	SS069	HDPE Soil Jar	200 mL	00621019042922	Grey	No	
057	SS069	Soil Glass Jar - Unpreserved	150 mL	00260321039273	Orange	No	
057	SS069	Soil Glass Jar - Unpreserved	150 mL	00260321039277	Orange	No	
058	SS070	HDPE Soil Jar	200 mL	00621019043757	Grey	No	
058	SS070	HDPE Soil Jar	200 mL	00621019043802	Grey	No	
059	SS071	HDPE Soil Jar	200 mL	00621019043748	Grey	No	
059	SS071	HDPE Soil Jar	200 mL	00621019043805	Grey	No	
060	SS072	HDPE Soil Jar	200 mL	00621019043761	Grey	No	
060	SS072	HDPE Soil Jar	200 mL	00621019043753	Grey	No	
061	SS073	HDPE Soil Jar	200 mL	00621019043759	Grey	No	
061	SS073	HDPE Soil Jar	200 mL	00621019043792	Grey	No	
062	SS074	HDPE Soil Jar	200 mL	00621019043806	Grey	No	
062	SS074	HDPE Soil Jar	200 mL	00621019043755	Grey	No	
063	SS075	HDPE Soil Jar	200 mL	00621019043742	Grey	No	
063	SS075	HDPE Soil Jar	200 mL	00621019043794	Grey	No	
064	SS076	HDPE Soil Jar	200 mL	00621019043751	Grey	No	
064	SS076	HDPE Soil Jar	200 mL	00621019043749	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 26152 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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:

065	SS077	HDPE Soil Jar	200 mL	00621019043790	Grey	No	
065	SS077	HDPE Soil Jar	200 mL	00621019043777	Grey	No	
066	SS078	HDPE Soil Jar	200 mL	00621019043770	Grey	No	
066	SS078	HDPE Soil Jar	200 mL	00621019043798	Grey	No	
067	SS079	HDPE Soil Jar	200 mL	00621019043773	Grey	No	
067	SS079	HDPE Soil Jar	200 mL	00621019043731	Grey	No	
068	SS080	Soil Glass Jar - Unpreserved	150 mL	00260321039260	Orange	No	
068	SS080	Soil Glass Jar - Unpreserved	150 mL	00260321039274	Orange	No	
068	SS080	HDPE Soil Jar	200 mL	00621019043810	Grey	No	
068	SS080	HDPE Soil Jar	200 mL	00621019043735	Grey	No	
069	SS081	HDPE Soil Jar	200 mL	00621019043756	Grey	No	
069	SS081	HDPE Soil Jar	200 mL	00621019043765	Grey	No	
070	SS082	HDPE Soil Jar	200 mL	00621019043739	Grey	No	
070	SS082	HDPE Soil Jar	200 mL	00621019043785	Grey	No	
071	QC115	HDPE Soil Jar	200 mL	00621019043782	Grey	No	
071	QC115	HDPE Soil Jar	200 mL	00621019043763	Grey	No	
072	QC116	HDPE Soil Jar	200 mL	00621019043762	Grey	No	
072	QC116	HDPE Soil Jar	200 mL	00621019043769	Grey	No	
073	QC117	HDPE Soil Jar	200 mL	00621019042924	Grey	No	
073	QC117	HDPE Soil Jar	200 mL	00621019042951	Grey	No	
074	SS111	HDPE Soil Jar	200 mL	00621019042966	Grey	No	
074	SS111	HDPE Soil Jar	200 mL	00621019042876	Grey	No	
075	SS112	HDPE Soil Jar	200 mL	00621019043743	Grey	No	
075	SS112	HDPE Soil Jar	200 mL	00621019043730	Grey	No	
076	SS113	HDPE Soil Jar	200 mL	00621019043789	Grey	No	
076	SS113	HDPE Soil Jar	200 mL	00621019043778	Grey	No	
077	SS114	HDPE Soil Jar	200 mL	00621019043744	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 26152 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE: / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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:

077	SS114	HDPE Soil Jar	200 mL	00621019043783	Grey	No	
077	SS114	Soil Glass Jar - Unpreserved	150 mL	00260321041400	Orange	No	
077	SS114	Soil Glass Jar - Unpreserved	150 mL	00260321041419	Orange	No	
078	SS062	HDPE Soil Jar	200 mL	00621019043121	Grey	No	
078	SS062	HDPE Soil Jar	200 mL	00621019043099	Grey	No	
079	SS059	HDPE Soil Jar	200 mL	00621019043076	Grey	No	
079	SS059	HDPE Soil Jar	200 mL	00621019043017	Grey	No	
080	SS060	HDPE Soil Jar	200 mL	00621019043028	Grey	No	
080	SS060	HDPE Soil Jar	200 mL	00621019043038	Grey	No	
081	SS061	HDPE Soil Jar	200 mL	00621019043120	Grey	No	
081	SS061	HDPE Soil Jar	200 mL	00621019043104	Grey	No	
082	SS066	HDPE Soil Jar	200 mL	00621019043089	Grey	No	
082	SS066	HDPE Soil Jar	200 mL	00621019043096	Grey	No	
083	SS063	HDPE Soil Jar	200 mL	00621019043075	Grey	No	
083	SS063	HDPE Soil Jar	200 mL	00621019043024	Grey	No	
084	SS064	HDPE Soil Jar	200 mL	00621019043061	Grey	No	
084	SS064	HDPE Soil Jar	200 mL	00621019043078	Grey	No	
085	SS065	HDPE Soil Jar	200 mL	00621019043103	Grey	No	
085	SS065	HDPE Soil Jar	200 mL	00621019043073	Grey	No	
086	SS084	HDPE Soil Jar	200 mL	00621019043123	Grey	No	
086	SS084	HDPE Soil Jar	200 mL	00621019043108	Grey	No	
087	SD Pond 2	HDPE Soil Jar	200 mL	00621019043039	Grey	No	
087	SD Pond 2	HDPE Soil Jar	200 mL	00621019042995	Grey	No	
088	SD Pond 1	HDPE Soil Jar	200 mL	00621019043063	Grey	No	
088	SD Pond 1	HDPE Soil Jar	200 mL	00621019043087	Grey	No	
089	SS083	HDPE Soil Jar	200 mL	00621019043020	Grey	No	
089	SS083	HDPE Soil Jar	200 mL	00621019043100	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: **26152** *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE: / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

090	SS085	HDPE Soil Jar	200 mL	00621019043011	Grey	No	
090	SS085	HDPE Soil Jar	200 mL	00621019042986	Grey	No	
091	SS086	HDPE Soil Jar	200 mL	00621019043013	Grey	No	
091	SS086	HDPE Soil Jar	200 mL	00621019043065	Grey	No	
092	SS099	HDPE Soil Jar	200 mL	00621019042943	Grey	No	
092	SS099	HDPE Soil Jar	200 mL	00621019042915	Grey	No	
093	SS101	HDPE Soil Jar	200 mL	00621019042950	Grey	No	
093	SS101	HDPE Soil Jar	200 mL	00621019042960	Grey	No	
094	SS102	HDPE Soil Jar	200 mL	00621019042920	Grey	No	
094	SS102	HDPE Soil Jar	200 mL	00621019042932	Grey	No	
095	SS100	HDPE Soil Jar	200 mL	00621019042938	Grey	No	
095	SS100	HDPE Soil Jar	200 mL	00621019042971	Grey	No	
096	SS115	HDPE Soil Jar	200 mL	00621019043837	Grey	No	
096	SS115	HDPE Soil Jar	200 mL	00621019043836	Grey	No	
097	SS116	HDPE Soil Jar	200 mL	00621019043863	Grey	No	
097	SS116	HDPE Soil Jar	200 mL	00621019043827	Grey	No	
098	SS117	HDPE Soil Jar	200 mL	00621019043839	Grey	No	
098	SS117	HDPE Soil Jar	200 mL	00621019043867	Grey	No	
099	SS118	HDPE Soil Jar	200 mL	00621019043825	Grey	No	
099	SS118	HDPE Soil Jar	200 mL	00621019043857	Grey	No	
099	SS118	Soil Glass Jar - Unpreserved	150 mL	00260321041405	Orange	No	
099	SS118	Soil Glass Jar - Unpreserved	150 mL	00260321041381	Orange	No	
100	SD021	HDPE Soil Jar	200 mL	00621019043781	Grey	No	
100	SD021	HDPE Soil Jar	200 mL	00621019043880	Grey	No	
101	SD022	HDPE Soil Jar	200 mL	00621019043750	Grey	No	
101	SD022	HDPE Soil Jar	200 mL	00621019043808	Grey	No	
102	SS120	HDPE Soil Jar	200 mL	00621019043110	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: **26152** *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE: / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free Ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

102	SS120	HDPE Soil Jar	200 mL	00621019043053	Grey	No	
103	SS119	HDPE Soil Jar	200 mL	00621019043125	Grey	No	
103	SS119	HDPE Soil Jar	200 mL	00621019043057	Grey	No	
104	SS121	HDPE Soil Jar	200 mL	00621019043021	Grey	No	
104	SS121	HDPE Soil Jar	200 mL	00621019043107	Grey	No	
105	SS122	HDPE Soil Jar	200 mL	00621019042923	Grey	No	
105	SS122	HDPE Soil Jar	200 mL	00621019046089	Grey	No	
106	SS017	HDPE Soil Jar	200 mL	00621019042963	Grey	No	
106	SS017	HDPE Soil Jar	200 mL	00621019042858	Grey	No	
107	SS018	HDPE Soil Jar	200 mL	00621019042873	Grey	No	
107	SS018	HDPE Soil Jar	200 mL	00621019042893	Grey	No	
108	SS020	HDPE Soil Jar	200 mL	00621019042850	Grey	No	
108	SS020	HDPE Soil Jar	200 mL	00621019042885	Grey	No	
109	SS019	HDPE Soil Jar	200 mL	00621019042931	Grey	No	
109	SS019	HDPE Soil Jar	200 mL	00621019042957	Grey	No	
110	SS021	HDPE Soil Jar	200 mL	00621019042869	Grey	No	
110	SS021	HDPE Soil Jar	200 mL	00621019042936	Grey	No	
111	SS022	HDPE Soil Jar	200 mL	00621019042900	Grey	No	
111	SS022	HDPE Soil Jar	200 mL	00621019042926	Grey	No	
112	SS023	HDPE Soil Jar	200 mL	00621019042882	Grey	No	
112	SS023	HDPE Soil Jar	200 mL	00621019042865	Grey	No	
113	SS024	HDPE Soil Jar	200 mL	00621019042955	Grey	No	
113	SS024	HDPE Soil Jar	200 mL	00621019042857	Grey	No	
114	SS025	HDPE Soil Jar	200 mL	00621019042914	Grey	No	
114	SS025	HDPE Soil Jar	200 mL	00621019042847	Grey	No	
115	SS026	HDPE Soil Jar	200 mL	00621019042972	Grey	No	
115	SS026	HDPE Soil Jar	200 mL	00621019042953	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE:

/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

116	SS027	HDPE Soil Jar	200 mL	00621019042870	Grey	No	
116	SS027	HDPE Soil Jar	200 mL	00621019042939	Grey	No	
117	QC125	HDPE Soil Jar	200 mL	00621019042884	Grey	No	
117	QC125	HDPE Soil Jar	200 mL	00621019042838	Grey	No	
118	SS028	Soil Glass Jar - Unpreserved	150 mL	00260321041413	Orange	No	
118	SS028	Soil Glass Jar - Unpreserved	150 mL	00260321041403	Orange	No	
118	SS028	HDPE Soil Jar	200 mL	00621019042959	Grey	No	
118	SS028	HDPE Soil Jar	200 mL	00621019042962	Grey	No	
119	SS029	HDPE Soil Jar	200 mL	00621019042897	Grey	No	
119	SS029	HDPE Soil Jar	200 mL	00621019042918	Grey	No	
120	SS030	HDPE Soil Jar	200 mL	00621019042859	Grey	No	
120	SS030	HDPE Soil Jar	200 mL	00621019042911	Grey	No	
121	SS032	HDPE Soil Jar	200 mL	00621019042958	Grey	No	
121	SS032	HDPE Soil Jar	200 mL	00621019042975	Grey	No	
122	SS031	HDPE Soil Jar	200 mL	00621019043784	Grey	No	
122	SS031	HDPE Soil Jar	200 mL	00621019043796	Grey	No	
123	SS033	HDPE Soil Jar	200 mL	00621019043859	Grey	No	
123	SS033	HDPE Soil Jar	200 mL	00621019043829	Grey	No	
124	QC126	HDPE Soil Jar	200 mL	00621019042899	Grey	No	
124	QC126	HDPE Soil Jar	200 mL	00621019042930	Grey	No	
125	QC127	HDPE Soil Jar	200 mL	00621019043764	Grey	No	
125	QC127	HDPE Soil Jar	200 mL	00621019043860	Grey	No	
126	SS034	HDPE Soil Jar	200 mL	00621019043800	Grey	No	
126	SS034	Soil Glass Jar - Unpreserved	150 mL	00260321041409	Orange	No	
126	SS034	Soil Glass Jar - Unpreserved	150 mL	00260321041404	Orange	No	
126	SS034	HDPE Soil Jar	200 mL	00621019043865	Grey	No	
127	SS035	HDPE Soil Jar	200 mL	00621019043097	Grey	No	

CHAIN OF CUSTODY

COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris

PRIMARY SAMPLER: Mark Harris

CONTACT PH:

QUOTE NO: EP/726/21

SAMPLER MOBILE: / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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:

127	SS035	HDPE Soil Jar	200 mL	00621019042976	Grey	No	
128	SS036	HDPE Soil Jar	200 mL	00621019043098	Grey	No	
128	SS036	HDPE Soil Jar	200 mL	00621019042987	Grey	No	
129	SS037	HDPE Soil Jar	200 mL	00621019043062	Grey	No	
129	SS037	HDPE Soil Jar	200 mL	00621019043084	Grey	No	
129	SS037	Soil Glass Jar - Unpreserved	150 mL	00260321041402	Orange	No	
129	SS037	Soil Glass Jar - Unpreserved	150 mL	00260321041383	Orange	No	
130	SS038	HDPE Soil Jar	200 mL	00621019043056	Grey	No	
130	SS038	HDPE Soil Jar	200 mL	00621019043019	Grey	No	
131	SS039	HDPE Soil Jar	200 mL	00621019043031	Grey	No	
131	SS039	HDPE Soil Jar	200 mL	00621019043117	Grey	No	

Total Bottle Count: ALS: 280, Non ALS: 0

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EP2110221**

Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
E-mail	: mark.harris2@cardno.com.au	E-mail	: nick.courts@alsglobal.com
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Facsimile	: ----	Facsimile	: +61-8-9406 1399
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Page	: 1 of 4
Order number	: CW1173100	Quote number	: EP2021CARBSD0020 (EP/726/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Sampler	: Mark Harris		

Dates

Date Samples Received	: 01-Sep-2021 09:45	Issue Date	: 03-Sep-2021
Client Requested Due Date	: 20-Sep-2021	Scheduled Reporting Date	: **20-Sep-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 20	Temperature	: 20.1 - Ice present
Receipt Detail	: Ice Melted	No. of samples received / analysed	: 72 / 72

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
- PSD conducted by ALS Newcastle, NATA accreditation no. 825, site no 1656.
- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (Samples.Perth@alsglobal.com)
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- **PSD analysis will be conducted by ALS Environmental, Newcastle, NATA accreditation no. 825, Site No. 1656.**
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Please note that your submission has been split into several Work Orders EP2110221 and EP2110231 to facilitate the regular delivery of data.**
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911.**
- **pH analysis should be conducted within 6 hours of sampling.**
- **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: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EN60-Dla-P Deionised Water Leach - Plastic Leaching Vessel	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29	SOIL - P-22 (WA/SYD) NEPM Screen for Soil Classification WA
EP2110221-001	19-Aug-2021 08:38	QC104	✓	✓	✓	✓	
EP2110221-002	19-Aug-2021 08:41	SD002	✓	✓	✓	✓	
EP2110221-003	19-Aug-2021 10:18	SD003	✓	✓	✓	✓	
EP2110221-004	19-Aug-2021 11:02	SD004	✓	✓	✓	✓	
EP2110221-005	20-Aug-2021 16:59	SD017	✓	✓	✓	✓	
EP2110221-006	20-Aug-2021 08:20	SD025	✓	✓	✓	✓	
EP2110221-007	20-Aug-2021 10:52	SD009	✓	✓	✓	✓	
EP2110221-008	20-Aug-2021 10:56	SD008	✓	✓	✓	✓	
EP2110221-009	20-Aug-2021 11:14	SD016	✓	✓	✓	✓	
EP2110221-010	20-Aug-2021 12:11	SD015	✓	✓	✓	✓	
EP2110221-011	20-Aug-2021 14:36	SD011	✓	✓	✓	✓	
EP2110221-012	20-Aug-2021 14:37	QC106	✓	✓	✓	✓	
EP2110221-013	20-Aug-2021 14:55	SD010	✓	✓	✓	✓	
EP2110221-014	20-Aug-2021 15:12	SD005	✓	✓	✓	✓	
EP2110221-015	20-Aug-2021 15:21	SD012	✓	✓	✓	✓	
EP2110221-016	20-Aug-2021 15:24	SD013	✓	✓	✓	✓	
EP2110221-017	20-Aug-2021 15:42	SD014	✓	✓	✓	✓	
EP2110221-018	20-Aug-2021 15:44	SD007	✓	✓	✓	✓	
EP2110221-019	20-Aug-2021 15:45	SD006	✓	✓	✓	✓	
EP2110221-020	20-Aug-2021 17:27	SS001	✓	✓	✓	✓	
EP2110221-021	20-Aug-2021 17:28	SS002	✓	✓	✓	✓	
EP2110221-022	20-Aug-2021 17:29	SS003	✓	✓	✓	✓	✓
EP2110221-023	20-Aug-2021 17:38	SS004	✓	✓	✓	✓	
EP2110221-024	20-Aug-2021 17:39	SS005	✓	✓	✓	✓	
EP2110221-025	20-Aug-2021 17:40	SS006	✓	✓	✓	✓	
EP2110221-026	20-Aug-2021 17:44	SS007	✓	✓	✓	✓	
EP2110221-027	20-Aug-2021 17:45	SS008	✓	✓	✓	✓	
EP2110221-028	20-Aug-2021 17:46	SS009	✓	✓	✓	✓	
EP2110221-029	20-Aug-2021 17:47	SS010	✓	✓	✓	✓	
EP2110221-030	20-Aug-2021 17:48	SS011	✓	✓	✓	✓	
EP2110221-031	20-Aug-2021 17:48	SS012	✓	✓	✓	✓	
EP2110221-032	20-Aug-2021 17:49	SS013	✓	✓	✓	✓	
EP2110221-033	20-Aug-2021 17:51	SS014	✓	✓	✓	✓	✓
EP2110221-034	20-Aug-2021 17:52	SS015	✓	✓	✓	✓	
EP2110221-035	20-Aug-2021 17:53	SS016	✓	✓	✓	✓	

			SOIL - EA055-103 Moisture Content	SOIL - EN60-Dia-P Deionised Water Leach - Plastic Leaching Vessel	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29	SOIL - P-22 (WA/SYD) NEPM Screen for Soil Classification WA
EP2110221-036	21-Aug-2021 08:20	SS040	✓	✓	✓	✓	
EP2110221-037	21-Aug-2021 08:23	QC109	✓	✓	✓	✓	
EP2110221-038	21-Aug-2021 08:32	SS043	✓	✓	✓	✓	
EP2110221-039	21-Aug-2021 08:42	SS041	✓	✓	✓	✓	
EP2110221-040	21-Aug-2021 08:42	SS042	✓	✓	✓	✓	
EP2110221-041	21-Aug-2021 08:53	SS048	✓	✓	✓	✓	
EP2110221-042	21-Aug-2021 09:54	SS050	✓	✓	✓	✓	
EP2110221-043	21-Aug-2021 09:57	SS049	✓	✓	✓	✓	
EP2110221-044	21-Aug-2021 10:03	SS051	✓	✓	✓	✓	
EP2110221-045	21-Aug-2021 10:05	SS052	✓	✓	✓	✓	
EP2110221-046	21-Aug-2021 10:05	SS053	✓	✓	✓	✓	
EP2110221-047	21-Aug-2021 10:08	SS054	✓	✓	✓	✓	
EP2110221-048	21-Aug-2021 10:15	SS055	✓	✓	✓	✓	
EP2110221-049	21-Aug-2021 10:17	SS056	✓	✓	✓	✓	
EP2110221-050	21-Aug-2021 10:45	SS057	✓	✓	✓	✓	
EP2110221-051	21-Aug-2021 10:46	QC110	✓	✓	✓	✓	
EP2110221-052	21-Aug-2021 10:48	SS058	✓	✓	✓	✓	
EP2110221-053	21-Aug-2021 13:13	QC111	✓	✓	✓	✓	
EP2110221-054	21-Aug-2021 13:14	QC112	✓	✓	✓	✓	
EP2110221-055	21-Aug-2021 17:01	SS067	✓	✓	✓	✓	
EP2110221-056	21-Aug-2021 17:16	SS068	✓	✓	✓	✓	
EP2110221-057	21-Aug-2021 17:18	SS069	✓	✓	✓	✓	✓
EP2110221-058	21-Aug-2021 17:18	SS070	✓	✓	✓	✓	
EP2110221-059	21-Aug-2021 17:19	SS071	✓	✓	✓	✓	
EP2110221-060	21-Aug-2021 17:20	SS072	✓	✓	✓	✓	
EP2110221-061	21-Aug-2021 17:21	SS073	✓	✓	✓	✓	
EP2110221-062	21-Aug-2021 17:21	SS074	✓	✓	✓	✓	
EP2110221-063	21-Aug-2021 17:21	SS075	✓	✓	✓	✓	
EP2110221-064	21-Aug-2021 17:22	SS076	✓	✓	✓	✓	
EP2110221-065	21-Aug-2021 17:23	SS077	✓	✓	✓	✓	
EP2110221-066	21-Aug-2021 17:24	SS078	✓	✓	✓	✓	
EP2110221-067	21-Aug-2021 17:25	SS079	✓	✓	✓	✓	
EP2110221-068	21-Aug-2021 17:26	SS080	✓	✓	✓	✓	✓
EP2110221-069	21-Aug-2021 17:28	SS081	✓	✓	✓	✓	
EP2110221-070	21-Aug-2021 17:29	SS082	✓	✓	✓	✓	
EP2110221-071	21-Aug-2021 17:30	QC115	✓	✓	✓	✓	
EP2110221-072	21-Aug-2021 17:30	QC116	✓	✓	✓	✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA001: pH in soil using a 0.01M CaCl2 extract							
SS003	Soil Glass Jar - Unpreserved	27-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
SS014	Soil Glass Jar - Unpreserved	27-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
SS069	Soil Glass Jar - Unpreserved	28-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
SS080	Soil Glass Jar - Unpreserved	28-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
EA002: pH (1:5)							
SS003	Soil Glass Jar - Unpreserved	27-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
SS014	Soil Glass Jar - Unpreserved	27-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
SS069	Soil Glass Jar - Unpreserved	28-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
SS080	Soil Glass Jar - Unpreserved	28-Aug-2021	03-Sep-2021	01-Sep-2021	×	----	----
EA010: Electrical Conductivity (1:5)							
SS003	Soil Glass Jar - Unpreserved	27-Aug-2021	01-Oct-2021	01-Sep-2021	×	----	----
SS014	Soil Glass Jar - Unpreserved	27-Aug-2021	01-Oct-2021	01-Sep-2021	×	----	----
SS069	Soil Glass Jar - Unpreserved	28-Aug-2021	01-Oct-2021	01-Sep-2021	×	----	----
SS080	Soil Glass Jar - Unpreserved	28-Aug-2021	01-Oct-2021	01-Sep-2021	×	----	----

Requested Deliverables

ACCOUNTS PAYABLE (WA)

- A4 - AU Tax Invoice (INV)	Email	claire.armstrong@cardno.com.au

Laura Beames

- A4 - AU Tax Invoice (INV)	Email	laura.beames@cardno.com.au

Mark Harris

- *AU Certificate of Analysis - NATA (COA)	Email	mark.harris2@cardno.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	mark.harris2@cardno.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	mark.harris2@cardno.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	mark.harris2@cardno.com.au
- Attachment - Report (SUBCO)	Email	mark.harris2@cardno.com.au
- Chain of Custody (CoC) (COC)	Email	mark.harris2@cardno.com.au
- EDI Format - BHPIO (BHPIO)	Email	mark.harris2@cardno.com.au
- EDI Format - ESDAT (ESDAT)	Email	mark.harris2@cardno.com.au

Mickayla Graham

- *AU Certificate of Analysis - NATA (COA)	Email	Mickayla.graham@cardno.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Mickayla.graham@cardno.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Mickayla.graham@cardno.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Mickayla.graham@cardno.com.au
- Attachment - Report (SUBCO)	Email	Mickayla.graham@cardno.com.au
- Chain of Custody (CoC) (COC)	Email	Mickayla.graham@cardno.com.au
- EDI Format - BHPIO (BHPIO)	Email	Mickayla.graham@cardno.com.au
- EDI Format - ESDAT (ESDAT)	Email	Mickayla.graham@cardno.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP2110221**	Page	: 1 of 67
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021 09:45
Order number	: CW1173100	Date Analysis Commenced	: 06-Sep-2021
C-O-C number	: ----	Issue Date	: 20-Sep-2021 08:38
Sampler	: Mark Harris		
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Quote number	: EP/726/21		
No. of samples received	: 72		
No. of samples analysed	: 72		

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

This report supersedes any previous report(s) with this reference. Results 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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Vincent Emerton-Bell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, 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.

- PSD conducted by ALS Newcastle, NATA accreditation no. 825, site no 1656.
- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EP231X-SUT: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP231X-SUT: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).
- 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.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	QC104	SD002	SD003	SD004	SD017
				Sampling date / time	19-Aug-2021 08:38	19-Aug-2021 08:41	19-Aug-2021 10:18	19-Aug-2021 11:02	20-Aug-2021 16:59
					EP2110221-001	EP2110221-002	EP2110221-003	EP2110221-004	EP2110221-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0018**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0079**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0115**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0077**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0046**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0016**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QC104	SD002	SD003	SD004	SD017
				Sampling date / time	19-Aug-2021 08:38	19-Aug-2021 08:41	19-Aug-2021 10:18	19-Aug-2021 11:02	20-Aug-2021 16:59
Compound	CAS Number	LOR	Unit		EP2110221-001	EP2110221-002	EP2110221-003	EP2110221-004	EP2110221-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0289**
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0351**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**95.9**	**113**	**99.2**	**108**	**101**
13C8-PFOA	----	0.0005	%		**102**	**101**	**97.7**	**95.1**	**89.9**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SD025	SD009	SD008	SD016	SD015
				Sampling date / time	20-Aug-2021 08:20	20-Aug-2021 10:52	20-Aug-2021 10:56	20-Aug-2021 11:14	20-Aug-2021 12:11
					EP2110221-006	EP2110221-007	EP2110221-008	EP2110221-009	EP2110221-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0112**	<0.0002	<0.0002	<0.0002	**0.0004**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.148**	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**1.14**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.416**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.561**	<0.0005	<0.0005	**0.0006**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.138**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0213**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0120**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SD025	SD009	SD008	SD016	SD015
				Sampling date / time	20-Aug-2021 08:20	20-Aug-2021 10:52	20-Aug-2021 10:56	20-Aug-2021 11:14	20-Aug-2021 12:11
Compound	CAS Number	LOR	Unit		EP2110221-006	EP2110221-007	EP2110221-008	EP2110221-009	EP2110221-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.005**	<0.001	<0.001	**0.005**	**0.001**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.011**	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.004**	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0112**	<0.0002	<0.0002	<0.0002	**0.0004**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**2.43**	<0.0002	<0.0002	**0.0056**	**0.0014**
^ Sum of PFAS	----	0.0002	µg/L		**2.47**	<0.0002	<0.0002	**0.0056**	**0.0014**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**107**	**106**	**116**	**100**	**107**
13C8-PFOA	----	0.0005	%		**77.3**	**95.7**	**100**	**94.6**	**98.2**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SD011	QC106	SD010	SD005	SD012
				Sampling date / time	20-Aug-2021 14:36	20-Aug-2021 14:37	20-Aug-2021 14:55	20-Aug-2021 15:12	20-Aug-2021 15:21
					EP2110221-011	EP2110221-012	EP2110221-013	EP2110221-014	EP2110221-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0011**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SD011	QC106	SD010	SD005	SD012
				Sampling date / time	20-Aug-2021 14:36	20-Aug-2021 14:37	20-Aug-2021 14:55	20-Aug-2021 15:12	20-Aug-2021 15:21
Compound	CAS Number	LOR	Unit		EP2110221-011	EP2110221-012	EP2110221-013	EP2110221-014	EP2110221-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0011**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0011**
^ Sum of PFAS	----	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0011**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**105**	**111**	**91.3**	**101**	**102**
13C8-PFOA	----	0.0005	%		**98.2**	**101**	**82.1**	**100**	**97.4**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SD013	SD014	SD007	SD006	SS001
				Sampling date / time	20-Aug-2021 15:24	20-Aug-2021 15:42	20-Aug-2021 15:44	20-Aug-2021 15:45	20-Aug-2021 17:27
					EP2110221-016	EP2110221-017	EP2110221-018	EP2110221-019	EP2110221-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0013**	**0.0010**	**0.0006**	**0.0006**	**0.0008**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0025**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0004**	**0.0008**	**0.0007**	**0.0003**	**0.0016**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0021**	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0126**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0130**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0092**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0023**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0008**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SD013	SD014	SD007	SD006	SS001
				Sampling date / time	20-Aug-2021 15:24	20-Aug-2021 15:42	20-Aug-2021 15:44	20-Aug-2021 15:45	20-Aug-2021 17:27
Compound	CAS Number	LOR	Unit		EP2110221-016	EP2110221-017	EP2110221-018	EP2110221-019	EP2110221-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	**0.363**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	**0.005**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0004**	**0.0008**	**0.0007**	**0.0003**	**0.0041**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0038**	**0.0018**	**0.0013**	**0.0009**	**0.408**
^ Sum of PFAS	----	0.0002	µg/L		**0.0038**	**0.0018**	**0.0013**	**0.0009**	**0.411**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**106**	**99.0**	**99.8**	**101**	**101**
13C8-PFOA	----	0.0005	%		**99.3**	**86.4**	**97.2**	**95.7**	**97.8**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS002	SS003	SS004	SS005	SS006
				Sampling date / time	20-Aug-2021 17:28	20-Aug-2021 17:29	20-Aug-2021 17:38	20-Aug-2021 17:39	20-Aug-2021 17:40
					EP2110221-021	EP2110221-022	EP2110221-023	EP2110221-024	EP2110221-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0053**	**0.0008**	**0.0007**	**0.0007**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.0006**	**0.0007**	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0115**	**0.0020**	**0.0018**	**0.0020**	**0.0012**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0024**	**0.0406**	<0.0020	**0.0174**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0032**	**0.0846**	<0.0005	**0.0289**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0016**	**0.0025**	<0.0005	**0.0015**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0014**	**0.0292**	**0.0012**	**0.0064**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0055**	**0.0035**	**0.0033**	**0.0018**	**0.0007**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0290**	**0.0009**	**0.0011**	**0.0019**	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0176**	**0.0009**	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		**0.0021**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS002	SS003	SS004	SS005	SS006
				Sampling date / time	20-Aug-2021 17:28	20-Aug-2021 17:29	20-Aug-2021 17:38	20-Aug-2021 17:39	20-Aug-2021 17:40
Compound	CAS Number	LOR	Unit		EP2110221-021	EP2110221-022	EP2110221-023	EP2110221-024	EP2110221-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.005**	**0.043**	**0.052**	**0.038**	**0.005**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.019**	**0.002**	**0.001**	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0115**	**0.0026**	**0.0025**	**0.0020**	**0.0012**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0496**	**0.213**	**0.0608**	**0.0967**	**0.0076**
^ Sum of PFAS	----	0.0002	µg/L		**0.0983**	**0.215**	**0.0619**	**0.0986**	**0.0076**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**100**	**95.8**	**103**	**99.4**	**95.3**
13C8-PFOA	----	0.0005	%		**103**	**94.5**	**98.5**	**96.7**	**93.6**

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS007	SS008	SS009	SS010	SS011
				Sampling date / time	20-Aug-2021 17:44	20-Aug-2021 17:45	20-Aug-2021 17:46	20-Aug-2021 17:47	20-Aug-2021 17:48
Compound	CAS Number	LOR	Unit		EP2110221-026	EP2110221-027	EP2110221-028	EP2110221-029	EP2110221-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0024**	**0.0006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0032**	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0014**	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0067**	**0.0040**	**0.0018**	**0.0021**	**0.0076**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0006**	**0.0005**	<0.0005	**0.0020**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0009**	**0.0006**	<0.0005	<0.0005	**0.0005**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0015**	**0.0008**	<0.0005	<0.0005	**0.0009**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS007	SS008	SS009	SS010	SS011
				Sampling date / time	20-Aug-2021 17:44	20-Aug-2021 17:45	20-Aug-2021 17:46	20-Aug-2021 17:47	20-Aug-2021 17:48
Compound	CAS Number	LOR	Unit		EP2110221-026	EP2110221-027	EP2110221-028	EP2110221-029	EP2110221-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	**0.006**	**0.002**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.008**	**0.002**	<0.001	<0.001	**0.003**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0067**	**0.0040**	**0.0018**	**0.0053**	**0.0076**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0153**	**0.0065**	**0.0018**	**0.0157**	**0.0132**
^ Sum of PFAS	----	0.0002	µg/L		**0.0177**	**0.0079**	**0.0018**	**0.0171**	**0.0146**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**99.7**	**97.3**	**94.4**	**98.7**	**101**
13C8-PFOA	----	0.0005	%		**97.6**	**102**	**93.8**	**98.5**	**97.8**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS012	SS013	SS014	SS015	SS016
				Sampling date / time	20-Aug-2021 17:48	20-Aug-2021 17:49	20-Aug-2021 17:51	20-Aug-2021 17:52	20-Aug-2021 17:53
					EP2110221-031	EP2110221-032	EP2110221-033	EP2110221-034	EP2110221-035
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0010**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0006**	<0.0005	<0.0005	**0.0006**	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0073**	**0.0056**	**0.0007**	**0.0007**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0050**	**0.0114**	**0.0294**	**0.0157**	**0.0255**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0041**	**0.0106**	**0.156**	**0.0386**	**0.0335**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0066**	**0.0022**	**0.0098**	**0.0354**	**0.0082**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0097**	**0.0108**	**0.0796**	**0.136**	**0.0516**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0064**	**0.0050**	**0.0037**	**0.224**	**0.0064**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0084**	**0.0074**	**0.0034**	**0.0606**	**0.0037**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0023**	**0.0126**	**0.0095**	**0.0111**	**0.0069**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	**0.0005**	**0.0007**	**0.0009**	**0.0039**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS012	SS013	SS014	SS015	SS016
				Sampling date / time	20-Aug-2021 17:48	20-Aug-2021 17:49	20-Aug-2021 17:51	20-Aug-2021 17:52	20-Aug-2021 17:53
Compound	CAS Number	LOR	Unit		EP2110221-031	EP2110221-032	EP2110221-033	EP2110221-034	EP2110221-035
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.432**	**0.056**	**0.178**	**16.4**	**0.417**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.018**	**0.028**	**0.035**	**0.088**	**0.052**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	**0.002**	**0.010**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0079**	**0.0056**	**0.0007**	**0.0013**	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.491**	**0.130**	**0.492**	**16.9**	**0.594**
^ Sum of PFAS	----	0.0002	µg/L		**0.501**	**0.150**	**0.506**	**17.0**	**0.619**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**98.1**	**102**	**101**	**99.5**	**100**
13C8-PFOA	----	0.0005	%		**99.4**	**98.5**	**95.7**	**96.6**	**99.2**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS040	QC109	SS043	SS041	SS042
				Sampling date / time	21-Aug-2021 08:20	21-Aug-2021 08:23	21-Aug-2021 08:32	21-Aug-2021 08:42	21-Aug-2021 08:42
					EP2110221-036	EP2110221-037	EP2110221-038	EP2110221-039	EP2110221-040
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0007**	**0.0008**	**0.0016**	**0.0006**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0010**	**0.0011**	**0.0026**	**0.0003**	**0.0010**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0022**	**0.0023**	<0.0020	**0.0026**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	**0.0011**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS040	QC109	SS043	SS041	SS042
				Sampling date / time	21-Aug-2021 08:20	21-Aug-2021 08:23	21-Aug-2021 08:32	21-Aug-2021 08:42	21-Aug-2021 08:42
Compound	CAS Number	LOR	Unit		EP2110221-036	EP2110221-037	EP2110221-038	EP2110221-039	EP2110221-040
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0010**	**0.0011**	**0.0026**	**0.0003**	**0.0010**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0039**	**0.0042**	**0.0053**	**0.0035**	**0.0010**
^ Sum of PFAS	----	0.0002	µg/L		**0.0039**	**0.0042**	**0.0053**	**0.0035**	**0.0010**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**95.9**	**97.9**	**101**	**98.4**	**92.4**
13C8-PFOA	----	0.0005	%		**96.9**	**94.7**	**94.2**	**100**	**82.3**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS048	SS050	SS049	SS051	SS052
				Sampling date / time	21-Aug-2021 08:53	21-Aug-2021 09:54	21-Aug-2021 09:57	21-Aug-2021 10:03	21-Aug-2021 10:05
					EP2110221-041	EP2110221-042	EP2110221-043	EP2110221-044	EP2110221-045
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0006**	**0.0009**	**0.0010**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0007**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0014**	**0.0004**	**0.0009**	**0.0005**	**0.0013**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0021**	**0.0029**	**0.0029**	**0.0024**	**0.0339**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0018**	**0.0017**	**0.0017**	**0.0010**	**0.0404**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0120**	**0.0183**	**0.0178**	**0.0087**	**0.0151**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0067**	**0.0279**	**0.0384**	**0.0198**	**0.0310**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.114**	**0.0687**	**0.0358**	**0.0278**	**0.0632**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0295**	**0.0916**	**0.0424**	**0.0416**	**0.0797**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0065**	**0.0067**	**0.0126**	**0.0168**	**0.0271**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		**0.0007**	**0.0010**	**0.0020**	**0.0036**	**0.0042**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0006**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS048	SS050	SS049	SS051	SS052
				Sampling date / time	21-Aug-2021 08:53	21-Aug-2021 09:54	21-Aug-2021 09:57	21-Aug-2021 10:03	21-Aug-2021 10:05
Compound	CAS Number	LOR	Unit		EP2110221-041	EP2110221-042	EP2110221-043	EP2110221-044	EP2110221-045
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.940**	**0.301**	**0.284**	**0.215**	**0.676**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.050**	**0.138**	**0.088**	**0.135**	**0.479**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	**0.001**	**0.004**	**0.002**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0021**	**0.0004**	**0.0009**	**0.0005**	**0.0013**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**1.13**	**0.560**	**0.470**	**0.411**	**1.34**
^ Sum of PFAS	----	0.0002	µg/L		**1.16**	**0.659**	**0.528**	**0.477**	**1.45**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**105**	**62.4**	**101**	**96.5**	**98.4**
13C8-PFOA	----	0.0005	%		**91.8**	**87.6**	**89.6**	**87.6**	**89.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS053	SS054	SS055	SS056	SS057
				Sampling date / time	21-Aug-2021 10:05	21-Aug-2021 10:08	21-Aug-2021 10:15	21-Aug-2021 10:17	21-Aug-2021 10:45
					EP2110221-046	EP2110221-047	EP2110221-048	EP2110221-049	EP2110221-050
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0008**	**0.0007**	**0.0011**	**0.0012**	**0.0008**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0005**	**0.0012**	**0.0014**	**0.0005**	**0.0007**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0247**	**0.0046**	**0.0084**	**0.0025**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0154**	**0.0020**	**0.0061**	**0.0032**	**0.0005**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0468**	**0.0048**	**0.0073**	**0.0080**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0765**	**0.0246**	**0.0400**	**0.0369**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.145**	**0.0067**	**0.0271**	**0.0215**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.106**	**0.0098**	**0.0234**	**0.0318**	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0182**	**0.0061**	**0.0085**	**0.0062**	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		**0.0025**	<0.0005	**0.0007**	**0.0007**	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		**0.0008**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	**0.0007**	**0.0006**	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS053	SS054	SS055	SS056	SS057
				Sampling date / time	21-Aug-2021 10:05	21-Aug-2021 10:08	21-Aug-2021 10:15	21-Aug-2021 10:17	21-Aug-2021 10:45
Compound	CAS Number	LOR	Unit		EP2110221-046	EP2110221-047	EP2110221-048	EP2110221-049	EP2110221-050
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.720**	**0.412**	**1.60**	**0.905**	**0.002**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.208**	**0.070**	**0.104**	**0.097**	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.001**	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0005**	**0.0012**	**0.0014**	**0.0005**	**0.0007**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**1.24**	**0.527**	**1.80**	**1.08**	**0.0040**
^ Sum of PFAS	----	0.0002	µg/L		**1.37**	**0.543**	**1.83**	**1.11**	**0.0040**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**67.6**	**94.2**	**102**	**98.7**	**108**
13C8-PFOA	----	0.0005	%		**90.5**	**92.7**	**87.2**	**91.8**	**102**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	QC110	SS058	QC111	QC112	SS067
				Sampling date / time	21-Aug-2021 10:46	21-Aug-2021 10:48	21-Aug-2021 13:13	21-Aug-2021 13:14	21-Aug-2021 17:01
					EP2110221-051	EP2110221-052	EP2110221-053	EP2110221-054	EP2110221-055
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0007**	**0.0008**	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0005**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0028**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0006**	**0.0009**	**0.0008**	**0.0031**	**0.0097**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	**0.431**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0006**	<0.0005	**0.0320**	<0.0005	**1.23**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	**0.0518**	<0.0005	**0.0182**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0010**	**0.129**	<0.0005	**93.3**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	**0.223**	<0.0005	**0.0209**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	**0.0591**	<0.0005	**0.0018**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	**0.0170**	<0.0005	**0.0086**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	**0.0018**	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QC110	SS058	QC111	QC112	SS067
				Sampling date / time	21-Aug-2021 10:46	21-Aug-2021 10:48	21-Aug-2021 13:13	21-Aug-2021 13:14	21-Aug-2021 17:01
Compound	CAS Number	LOR	Unit		EP2110221-051	EP2110221-052	EP2110221-053	EP2110221-054	EP2110221-055
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	**0.008**
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.022**	**0.007**	**9.87**	**0.006**	**8.05**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.002**	<0.001	**0.105**	**0.001**	**0.320**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	**0.003**	<0.001	**0.004**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0006**	**0.0009**	**0.0008**	**0.0031**	**0.0125**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0259**	**0.0097**	**10.4**	**0.0101**	**103**
^ Sum of PFAS	----	0.0002	µg/L		**0.0259**	**0.0097**	**10.5**	**0.0101**	**103**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**109**	**107**	**119**	**113**	**120**
13C8-PFOA	----	0.0005	%		**104**	**102**	**103**	**106**	**110**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS068	SS069	SS070	SS071	SS072
				Sampling date / time	21-Aug-2021 17:16	21-Aug-2021 17:18	21-Aug-2021 17:18	21-Aug-2021 17:19	21-Aug-2021 17:20
					EP2110221-056	EP2110221-057	EP2110221-058	EP2110221-059	EP2110221-060
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0034**	<0.0005	**0.0006**	**0.0048**	**0.0048**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0047**	**0.0005**	**0.0004**	**0.0038**	**0.0039**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	**0.0038**	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0736**	**0.0765**	**0.0653**	**0.0555**	**0.0363**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.206**	**0.148**	**0.0508**	**0.216**	**0.144**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0149**	**0.0058**	**0.0501**	**0.0236**	**0.0546**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.298**	**0.350**	**0.400**	**0.148**	**0.182**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0249**	**0.0145**	**0.236**	**0.0163**	**0.0253**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0024**	**0.0017**	**0.0147**	**0.0020**	**0.0040**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0097**	**0.0143**	**0.0541**	**0.0072**	**0.0109**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	**0.0007**	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	**0.0008**	**0.0012**	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS068	SS069	SS070	SS071	SS072
				Sampling date / time	21-Aug-2021 17:16	21-Aug-2021 17:18	21-Aug-2021 17:18	21-Aug-2021 17:19	21-Aug-2021 17:20
Compound	CAS Number	LOR	Unit		EP2110221-056	EP2110221-057	EP2110221-058	EP2110221-059	EP2110221-060
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		**0.004**	**0.004**	**0.005**	<0.001	**0.001**
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**6.88**	**6.61**	**48.0**	**3.22**	**5.10**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.260**	**0.684**	**2.21**	**0.202**	**0.378**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.005**	**0.038**	**0.023**	**0.008**	**0.009**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0081**	**0.0005**	**0.0010**	**0.0086**	**0.0087**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**7.76**	**7.89**	**51.0**	**3.89**	**5.93**
^ Sum of PFAS	----	0.0002	µg/L		**7.79**	**7.95**	**51.1**	**3.91**	**5.95**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**112**	**114**	**90.5**	**119**	**114**
13C8-PFOA	----	0.0005	%		**109**	**98.9**	**105**	**105**	**117**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS073	SS074	SS075	SS076	SS077
				Sampling date / time	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:22	21-Aug-2021 17:23
					EP2110221-061	EP2110221-062	EP2110221-063	EP2110221-064	EP2110221-065
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	**0.0019**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0075**	**0.0027**	**0.0152**	**0.0194**	**0.0117**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0075**	**0.0035**	**0.0170**	**0.0222**	**0.0227**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0054**	**0.0061**	**0.0043**	**0.0053**	<0.0016
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0555**	**0.0611**	**0.0867**	**0.0550**	**0.0118**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0226**	**0.0493**	**0.0261**	**0.0219**	**0.0021**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0032**	**0.0051**	**0.0022**	**0.0019**	<0.0016
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0149**	**0.0211**	**0.0048**	**0.0101**	**0.0117**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS073	SS074	SS075	SS076	SS077
				Sampling date / time	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:22	21-Aug-2021 17:23
Compound	CAS Number	LOR	Unit		EP2110221-061	EP2110221-062	EP2110221-063	EP2110221-064	EP2110221-065
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**8.46**	**14.3**	**5.19**	**2.36**	**0.290**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.768**	**1.15**	**0.178**	**0.418**	**0.215**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.015**	**0.021**	**0.002**	**0.007**	**0.008**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	**0.0019**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**9.33**	**15.6**	**5.52**	**2.90**	**0.555**
^ Sum of PFAS	----	0.0002	µg/L		**9.36**	**15.6**	**5.53**	**2.92**	**0.575**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**106**	**100**	**93.0**	**117**	**100**
13C8-PFOA	----	0.0005	%		**97.0**	**104**	**96.0**	**106**	**93.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS078	SS079	SS080	SS081	SS082
				Sampling date / time	21-Aug-2021 17:24	21-Aug-2021 17:25	21-Aug-2021 17:26	21-Aug-2021 17:28	21-Aug-2021 17:29
					EP2110221-066	EP2110221-067	EP2110221-068	EP2110221-069	EP2110221-070
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0446**	**0.0306**	**0.0774**	**0.0266**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.115**	**0.0701**	**0.152**	**0.0614**	**0.0066**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0176**	**0.0074**	**0.0098**	**0.0027**	**0.0035**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.167**	**0.208**	**0.178**	**0.0504**	**0.0411**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0253**	**0.0206**	**0.0291**	**0.0061**	**0.0522**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0026**	**0.0018**	**0.0022**	<0.0016	**0.0051**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0117**	**0.0082**	**0.0064**	**0.0069**	**0.0138**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	SS078	SS079	SS080	SS081	SS082
				Sampling date / time	21-Aug-2021 17:24	21-Aug-2021 17:25	21-Aug-2021 17:26	21-Aug-2021 17:28	21-Aug-2021 17:29
Compound	CAS Number	LOR	Unit		EP2110221-066	EP2110221-067	EP2110221-068	EP2110221-069	EP2110221-070
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.004	<0.004	<0.004	<0.004	<0.004
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**6.23**	**7.24**	**3.60**	**1.28**	**13.1**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.526**	**0.282**	**0.162**	**0.260**	**0.679**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.010**	**0.004**	**0.003**	**0.006**	**0.009**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**7.12**	**7.86**	**4.21**	**1.69**	**13.9**
^ Sum of PFAS	----	0.0002	µg/L		**7.15**	**7.87**	**4.22**	**1.70**	**13.9**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**112**	**100**	**115**	**96.0**	**106**
13C8-PFOA	----	0.0005	%		**111**	**99.0**	**113**	**101**	**99.0**

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QC115	QC116	----	----	----
				Sampling date / time	21-Aug-2021 17:30	21-Aug-2021 17:30	----	----	----
Compound	CAS Number	LOR	Unit		EP2110221-071	EP2110221-072	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.0032**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	**0.0026**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0501**	**0.0234**	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0314**	**0.0230**	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0248**	**0.0035**	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.238**	**0.0421**	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.170**	**0.0197**	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0095**	**0.0024**	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0296**	**0.0087**	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		**0.0005**	<0.0005	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QC115	QC116	----	----	----
				Sampling date / time	21-Aug-2021 17:30	21-Aug-2021 17:30	----	----	----
Compound	CAS Number	LOR	Unit		EP2110221-071	EP2110221-072	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		**0.004**	<0.001	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**48.2**	**4.71**	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**1.46**	**0.334**	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.005**	**0.003**	----	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	**0.0058**	----	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**50.2**	**5.16**	----	----	----
^ Sum of PFAS	----	0.0002	µg/L		**50.2**	**5.18**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**86.1**	**99.3**	----	----	----
13C8-PFOA	----	0.0005	%		**97.2**	**93.7**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC104	SD002	SD003	SD004	SD017
			Sampling date / time	19-Aug-2021 08:38	19-Aug-2021 08:41	19-Aug-2021 10:18	19-Aug-2021 11:02	20-Aug-2021 16:59
Compound	CAS Number	LOR	Unit	EP2110221-001	EP2110221-002	EP2110221-003	EP2110221-004	EP2110221-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**16.6**	**16.7**	**24.2**	**11.5**	**44.7**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**7.6**	**7.7**	**7.6**	**8.6**	**8.8**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0005**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0003**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC104	SD002	SD003	SD004	SD017
				Sampling date / time	19-Aug-2021 08:38	19-Aug-2021 08:41	19-Aug-2021 10:18	19-Aug-2021 11:02	20-Aug-2021 16:59
Compound	CAS Number	LOR	Unit		EP2110221-001	EP2110221-002	EP2110221-003	EP2110221-004	EP2110221-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	**0.0027**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0045**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0011**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**99.5**	**97.5**	**104**	**99.0**	**97.5**
13C8-PFOA	----	0.0002	%		**100**	**99.0**	**99.0**	**98.0**	**97.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SD025	SD009	SD008	SD016	SD015
			Sampling date / time	20-Aug-2021 08:20	20-Aug-2021 10:52	20-Aug-2021 10:56	20-Aug-2021 11:14	20-Aug-2021 12:11
Compound	CAS Number	LOR	Unit	EP2110221-006	EP2110221-007	EP2110221-008	EP2110221-009	EP2110221-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**13.3**	**23.1**	**18.2**	**19.3**	**26.3**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**8.0**	**8.5**	**8.6**	**7.6**	**8.0**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0005**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	**0.007**	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0572**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0230**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0116**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0047**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0009**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0017**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	**0.0005**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SD025	SD009	SD008	SD016	SD015
				Sampling date / time	20-Aug-2021 08:20	20-Aug-2021 10:52	20-Aug-2021 10:56	20-Aug-2021 11:14	20-Aug-2021 12:11
Compound	CAS Number	LOR	Unit		EP2110221-006	EP2110221-007	EP2110221-008	EP2110221-009	EP2110221-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0005**	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0015**	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0118**	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.121**	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0005**	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.106**	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**110**	**102**	**99.5**	**110**	**98.5**
13C8-PFOA	----	0.0002	%		**100**	**100**	**99.0**	**103**	**98.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SD011	QC106	SD010	SD005	SD012
			Sampling date / time	20-Aug-2021 14:36	20-Aug-2021 14:37	20-Aug-2021 14:55	20-Aug-2021 15:12	20-Aug-2021 15:21
Compound	CAS Number	LOR	Unit	EP2110221-011	EP2110221-012	EP2110221-013	EP2110221-014	EP2110221-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**23.8**	**18.3**	**23.6**	**21.4**	**4.7**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**8.9**	**8.5**	**8.7**	**8.8**	**8.6**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SD011	QC106	SD010	SD005	SD012
				Sampling date / time	20-Aug-2021 14:36	20-Aug-2021 14:37	20-Aug-2021 14:55	20-Aug-2021 15:12	20-Aug-2021 15:21
Compound	CAS Number	LOR	Unit		EP2110221-011	EP2110221-012	EP2110221-013	EP2110221-014	EP2110221-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**105**	**99.5**	**105**	**102**	**100**
13C8-PFOA	----	0.0002	%		**99.5**	**96.0**	**99.0**	**99.5**	**98.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SD013	SD014	SD007	SD006	SS001
			Sampling date / time	20-Aug-2021 15:24	20-Aug-2021 15:42	20-Aug-2021 15:44	20-Aug-2021 15:45	20-Aug-2021 17:27
Compound	CAS Number	LOR	Unit	EP2110221-016	EP2110221-017	EP2110221-018	EP2110221-019	EP2110221-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**1.5**	**0.8**	**1.8**	**1.1**	**0.6**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**8.7**	**8.0**	**7.8**	**7.9**	**7.6**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0007**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SD013	SD014	SD007	SD006	SS001
				Sampling date / time	20-Aug-2021 15:24	20-Aug-2021 15:42	20-Aug-2021 15:44	20-Aug-2021 15:45	20-Aug-2021 17:27
Compound	CAS Number	LOR	Unit		EP2110221-016	EP2110221-017	EP2110221-018	EP2110221-019	EP2110221-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	**0.0089**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0100**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0100**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**101**	**99.0**	**104**	**108**	**104**
13C8-PFOA	----	0.0002	%		**100**	**96.5**	**102**	**99.5**	**99.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS002	SS003	SS004	SS005	SS006
			Sampling date / time	20-Aug-2021 17:28	20-Aug-2021 17:29	20-Aug-2021 17:38	20-Aug-2021 17:39	20-Aug-2021 17:40
Compound	CAS Number	LOR	Unit	EP2110221-021	EP2110221-022	EP2110221-023	EP2110221-024	EP2110221-025
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	7.5	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	8.0	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	683	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	0.6	2.1	2.8	0.2	19.7
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	13	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	3.26	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	4.3	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	0.7	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	0.3	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	<0.1	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	5.5	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	17.1	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	8.5	7.7	7.7	7.5	7.7
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	0.6	----	----	----
Total Organic Carbon	----	0.5	%	----	<0.5	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS002	SS003	SS004	SS005	SS006
			Sampling date / time	20-Aug-2021 17:28	20-Aug-2021 17:29	20-Aug-2021 17:38	20-Aug-2021 17:39	20-Aug-2021 17:40
Compound	CAS Number	LOR	Unit	EP2110221-021	EP2110221-022	EP2110221-023	EP2110221-024	EP2110221-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	**0.0009**	<0.0002	**0.0006**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	**0.0005**	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0007**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0007**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS002	SS003	SS004	SS005	SS006
				Sampling date / time	20-Aug-2021 17:28	20-Aug-2021 17:29	20-Aug-2021 17:38	20-Aug-2021 17:39	20-Aug-2021 17:40
Compound	CAS Number	LOR	Unit		EP2110221-021	EP2110221-022	EP2110221-023	EP2110221-024	EP2110221-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	**0.0015**	**0.0022**	**0.0007**	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0007**	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0007**	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0031**	**0.0029**	**0.0022**	**0.0013**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0010**	**0.0029**	**0.0022**	**0.0013**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**102**	**98.0**	**104**	**108**	**100**
13C8-PFOA	----	0.0002	%		**98.5**	**99.0**	**102**	**100**	**94.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS007	SS008	SS009	SS010	SS011
			Sampling date / time	20-Aug-2021 17:44	20-Aug-2021 17:45	20-Aug-2021 17:46	20-Aug-2021 17:47	20-Aug-2021 17:48
Compound	CAS Number	LOR	Unit	EP2110221-026	EP2110221-027	EP2110221-028	EP2110221-029	EP2110221-030
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**4.5**	**0.9**	**0.2**	**1.1**	**0.4**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**7.6**	**7.4**	**7.6**	**8.8**	**8.4**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS007	SS008	SS009	SS010	SS011
				Sampling date / time	20-Aug-2021 17:44	20-Aug-2021 17:45	20-Aug-2021 17:46	20-Aug-2021 17:47	20-Aug-2021 17:48
Compound	CAS Number	LOR	Unit		EP2110221-026	EP2110221-027	EP2110221-028	EP2110221-029	EP2110221-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		103	110	108	102	103
13C8-PFOA	----	0.0002	%		99.0	98.0	102	100	96.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS012	SS013	SS014	SS015	SS016
			Sampling date / time	20-Aug-2021 17:48	20-Aug-2021 17:49	20-Aug-2021 17:51	20-Aug-2021 17:52	20-Aug-2021 17:53
Compound	CAS Number	LOR	Unit	EP2110221-031	EP2110221-032	EP2110221-033	EP2110221-034	EP2110221-035
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	----	7.7	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	----	8.4	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	165	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	1.9	0.2	1.4	1.1	0.7
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	12	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	2.97	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	16.2	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	0.6	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	0.4	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	<0.1	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	17.3	----	----
Exchangeable Sodium Percent	----	0.1	%	----	----	0.4	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	----	11.4	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	8.6	8.2	8.6	8.6	9.0
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	1.4	----	----
Total Organic Carbon	----	0.5	%	----	----	0.8	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS012	SS013	SS014	SS015	SS016
			Sampling date / time	20-Aug-2021 17:48	20-Aug-2021 17:49	20-Aug-2021 17:51	20-Aug-2021 17:52	20-Aug-2021 17:53
Compound	CAS Number	LOR	Unit	EP2110221-031	EP2110221-032	EP2110221-033	EP2110221-034	EP2110221-035
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0002**	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	**0.0003**	**0.0034**	**0.0008**	**0.0006**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	**0.0002**	**0.0018**	**0.0030**	**0.0009**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	**0.0002**	**0.0008**	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0048**	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0002**	**0.0002**	<0.0002	**0.0015**	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	**0.0010**	**0.0005**	**0.0004**	**0.0002**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	**0.0004**	**0.0002**	<0.0002	**0.0005**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	**0.0002**	<0.0002	<0.0002	**0.0005**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0003**
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS012	SS013	SS014	SS015	SS016
				Sampling date / time	20-Aug-2021 17:48	20-Aug-2021 17:49	20-Aug-2021 17:51	20-Aug-2021 17:52	20-Aug-2021 17:53
Compound	CAS Number	LOR	Unit		EP2110221-031	EP2110221-032	EP2110221-033	EP2110221-034	EP2110221-035
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0148**	**0.0014**	**0.0055**	**0.318**	**0.0078**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0006**	**0.0020**	**0.0016**	**0.0035**	**0.0018**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	**0.0030**	**0.0020**	**0.0010**	**0.0135**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0156**	**0.0089**	**0.0152**	**0.334**	**0.0261**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	**0.0002**	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0154**	**0.0041**	**0.0125**	**0.331**	**0.0111**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**98.5**	**98.5**	**106**	**95.0**	**105**
13C8-PFOA	----	0.0002	%		**99.0**	**100**	**96.5**	**97.5**	**98.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS040	QC109	SS043	SS041	SS042
			Sampling date / time	21-Aug-2021 08:20	21-Aug-2021 08:23	21-Aug-2021 08:32	21-Aug-2021 08:42	21-Aug-2021 08:42
Compound	CAS Number	LOR	Unit	EP2110221-036	EP2110221-037	EP2110221-038	EP2110221-039	EP2110221-040
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	1.7	1.3	1.6	1.8	2.9
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	7.8	7.8	7.2	7.4	7.3
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS040	QC109	SS043	SS041	SS042
				Sampling date / time	21-Aug-2021 08:20	21-Aug-2021 08:23	21-Aug-2021 08:32	21-Aug-2021 08:42	21-Aug-2021 08:42
Compound	CAS Number	LOR	Unit		EP2110221-036	EP2110221-037	EP2110221-038	EP2110221-039	EP2110221-040
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		100	106	99.0	106	106
13C8-PFOA	----	0.0002	%		101	99.0	99.5	103	97.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS048	SS050	SS049	SS051	SS052
			Sampling date / time	21-Aug-2021 08:53	21-Aug-2021 09:54	21-Aug-2021 09:57	21-Aug-2021 10:03	21-Aug-2021 10:05
Compound	CAS Number	LOR	Unit	EP2110221-041	EP2110221-042	EP2110221-043	EP2110221-044	EP2110221-045
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**0.4**	**0.5**	**0.2**	**0.4**	**1.3**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**6.7**	**6.9**	**7.0**	**7.0**	**7.0**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0007**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	**0.0006**	**0.0007**	**0.0004**	**0.0009**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0002**	**0.0003**	**0.0003**	<0.0002	**0.0003**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0026**	**0.0020**	**0.0007**	**0.0005**	**0.0014**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0008**	**0.0022**	**0.0009**	**0.0007**	**0.0018**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0003**	**0.0002**	**0.0004**	**0.0004**	**0.0010**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0003**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS048	SS050	SS049	SS051	SS052
				Sampling date / time	21-Aug-2021 08:53	21-Aug-2021 09:54	21-Aug-2021 09:57	21-Aug-2021 10:03	21-Aug-2021 10:05
Compound	CAS Number	LOR	Unit		EP2110221-041	EP2110221-042	EP2110221-043	EP2110221-044	EP2110221-045
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0244**	**0.0108**	**0.0052**	**0.0047**	**0.0150**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0022**	**0.0053**	**0.0025**	**0.0032**	**0.0110**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0009**	**0.0011**	**0.0020**	**0.0030**	**0.0064**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0314**	**0.0225**	**0.0127**	**0.0129**	**0.0392**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0294**	**0.0190**	**0.0094**	**0.0088**	**0.0293**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**104**	**102**	**95.5**	**100**	**99.5**
13C8-PFOA	----	0.0002	%		**96.5**	**99.0**	**95.0**	**99.5**	**98.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS053	SS054	SS055	SS056	SS057
			Sampling date / time	21-Aug-2021 10:05	21-Aug-2021 10:08	21-Aug-2021 10:15	21-Aug-2021 10:17	21-Aug-2021 10:45
Compound	CAS Number	LOR	Unit	EP2110221-046	EP2110221-047	EP2110221-048	EP2110221-049	EP2110221-050
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**0.6**	**1.0**	**1.0**	**1.0**	**3.5**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**7.5**	**7.3**	**8.8**	**7.8**	**9.0**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0003**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0017**	**0.0005**	**0.0010**	**0.0009**	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0010**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0041**	<0.0002	**0.0006**	**0.0004**	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0035**	**0.0002**	**0.0007**	**0.0006**	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0011**	<0.0002	**0.0009**	**0.0002**	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	**0.0004**	<0.0002	**0.0003**	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	**0.0005**	<0.0002	**0.0003**	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS053	SS054	SS055	SS056	SS057
				Sampling date / time	21-Aug-2021 10:05	21-Aug-2021 10:08	21-Aug-2021 10:15	21-Aug-2021 10:17	21-Aug-2021 10:45
Compound	CAS Number	LOR	Unit		EP2110221-046	EP2110221-047	EP2110221-048	EP2110221-049	EP2110221-050
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0254**	**0.0079**	**0.0426**	**0.0176**	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0120**	**0.0022**	**0.0099**	**0.0032**	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0042**	**0.0007**	**0.0042**	**0.0018**	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0542**	**0.0115**	**0.0605**	**0.0247**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0445**	**0.0106**	**0.0541**	**0.0221**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**99.0**	**101**	**104**	**102**	**100**
13C8-PFOA	----	0.0002	%		**99.5**	**103**	**100**	**97.5**	**98.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC110	SS058	QC111	QC112	SS067
			Sampling date / time	21-Aug-2021 10:46	21-Aug-2021 10:48	21-Aug-2021 13:13	21-Aug-2021 13:14	21-Aug-2021 17:01
Compound	CAS Number	LOR	Unit	EP2110221-051	EP2110221-052	EP2110221-053	EP2110221-054	EP2110221-055
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**5.0**	**1.6**	**0.8**	**2.1**	**0.9**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**8.6**	**8.9**	**8.1**	**7.9**	**8.1**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	**0.009**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	**0.0006**	<0.0002	**0.0227**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	**0.0033**	<0.0002	**0.0175**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	**0.0011**	<0.0002	**0.0003**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	**0.0047**	<0.0002	**0.0004**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	**0.0015**	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	**0.0005**	<0.0002	**0.0002**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC110	SS058	QC111	QC112	SS067
				Sampling date / time	21-Aug-2021 10:46	21-Aug-2021 10:48	21-Aug-2021 13:13	21-Aug-2021 13:14	21-Aug-2021 17:01
Compound	CAS Number	LOR	Unit		EP2110221-051	EP2110221-052	EP2110221-053	EP2110221-054	EP2110221-055
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	**0.231**	<0.0005	**0.183**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	**0.0037**	<0.0005	**0.0130**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	**0.0010**	<0.0005	**0.0026**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	**0.247**	<0.0002	**0.249**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	**0.244**	<0.0002	**0.246**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**100**	**95.0**	**99.5**	**102**	**99.5**
13C8-PFOA	----	0.0002	%		**101**	**98.5**	**95.5**	**101**	**95.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS068	SS069	SS070	SS071	SS072
			Sampling date / time	21-Aug-2021 17:16	21-Aug-2021 17:18	21-Aug-2021 17:18	21-Aug-2021 17:19	21-Aug-2021 17:20
Compound	CAS Number	LOR	Unit	EP2110221-056	EP2110221-057	EP2110221-058	EP2110221-059	EP2110221-060
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	8.5	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	9.2	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	391	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	1.0	2.6	1.2	3.1	3.0
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	6	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	3.31	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	3.2	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	1.3	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	0.2	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	0.3	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	5.0	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	9.19	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	8.0	8.5	8.1	7.8	7.8
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	2.8	----	----	----
Total Organic Carbon	----	0.5	%	----	1.6	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS068	SS069	SS070	SS071	SS072
			Sampling date / time	21-Aug-2021 17:16	21-Aug-2021 17:18	21-Aug-2021 17:18	21-Aug-2021 17:19	21-Aug-2021 17:20
Compound	CAS Number	LOR	Unit	EP2110221-056	EP2110221-057	EP2110221-058	EP2110221-059	EP2110221-060
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	**0.004**	**0.003**	**0.002**	**0.001**	**0.002**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0057**	**0.0034**	**0.0008**	**0.0036**	**0.0031**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0072**	**0.0101**	**0.0048**	**0.0026**	**0.0046**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0003**	<0.0002	**0.0007**	**0.0004**	**0.0014**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0006**	**0.0003**	**0.0032**	**0.0003**	**0.0006**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	**0.0003**	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0005**	**0.0005**	**0.0018**	<0.0002	**0.0004**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	**0.0002**	**0.0008**	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS068	SS069	SS070	SS071	SS072
				Sampling date / time	21-Aug-2021 17:16	21-Aug-2021 17:18	21-Aug-2021 17:18	21-Aug-2021 17:19	21-Aug-2021 17:20
Compound	CAS Number	LOR	Unit		EP2110221-056	EP2110221-057	EP2110221-058	EP2110221-059	EP2110221-060
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.183**	**0.191**	**0.969**	**0.0620**	**0.145**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0232**	**0.0286**	**0.0894**	**0.0067**	**0.0169**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0056**	**0.0105**	**0.0288**	**0.0026**	**0.0053**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.230**	**0.248**	**1.10**	**0.0792**	**0.179**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.224**	**0.236**	**1.07**	**0.0766**	**0.174**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**103**	**102**	**111**	**99.5**	**98.5**
13C8-PFOA	----	0.0002	%		**99.5**	**97.5**	**101**	**100**	**97.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS073	SS074	SS075	SS076	SS077
			Sampling date / time	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:22	21-Aug-2021 17:23
Compound	CAS Number	LOR	Unit	EP2110221-061	EP2110221-062	EP2110221-063	EP2110221-064	EP2110221-065
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**1.0**	**3.4**	**0.9**	**1.8**	**0.7**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**8.5**	**8.4**	**7.9**	**8.5**	**8.4**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	**0.001**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0003**	<0.0002	**0.0010**	**0.0009**	**0.0022**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0011**	**0.0010**	**0.0020**	**0.0010**	**0.0005**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0006**	**0.0013**	**0.0008**	**0.0006**	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0005**	**0.0008**	**0.0002**	**0.0004**	**0.0006**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	**0.0003**	**0.0005**	<0.0002	**0.0002**	**0.0006**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS073	SS074	SS075	SS076	SS077
				Sampling date / time	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:21	21-Aug-2021 17:22	21-Aug-2021 17:23
Compound	CAS Number	LOR	Unit		EP2110221-061	EP2110221-062	EP2110221-063	EP2110221-064	EP2110221-065
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.219**	**0.403**	**0.155**	**0.113**	**0.0112**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0365**	**0.0539**	**0.0136**	**0.0220**	**0.0145**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0178**	**0.0294**	**0.0051**	**0.0105**	**0.0222**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.276**	**0.490**	**0.178**	**0.149**	**0.0528**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.258**	**0.459**	**0.172**	**0.138**	**0.0294**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**102**	**106**	**100**	**92.5**	**99.0**
13C8-PFOA	----	0.0002	%		**86.5**	**84.5**	**92.0**	**91.5**	**90.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS078	SS079	SS080	SS081	SS082
			Sampling date / time	21-Aug-2021 17:24	21-Aug-2021 17:25	21-Aug-2021 17:26	21-Aug-2021 17:28	21-Aug-2021 17:29
Compound	CAS Number	LOR	Unit	EP2110221-066	EP2110221-067	EP2110221-068	EP2110221-069	EP2110221-070
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	----	8.4	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	----	8.9	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	674	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	1.4	1.3	3.2	0.7	0.7
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	9	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	3.49	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	3.5	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	1.2	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	0.3	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	0.4	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	5.4	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	----	8.93	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	8.0	8.4	8.0	8.0	8.6
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	0.8	----	----
Total Organic Carbon	----	0.5	%	----	----	<0.5	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS078	SS079	SS080	SS081	SS082
				Sampling date / time	21-Aug-2021 17:24	21-Aug-2021 17:25	21-Aug-2021 17:26	21-Aug-2021 17:28	21-Aug-2021 17:29
Compound	CAS Number	LOR	Unit		EP2110221-066	EP2110221-067	EP2110221-068	EP2110221-069	EP2110221-070
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		**0.002**	**0.002**	**0.003**	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		**0.0050**	**0.0039**	**0.0053**	**0.0022**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		**0.0036**	**0.0051**	**0.0031**	**0.0009**	**0.0008**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		**0.0004**	**0.0002**	**0.0002**	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		**0.0007**	**0.0006**	**0.0007**	<0.0002	**0.0017**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		**0.0006**	**0.0004**	**0.0003**	**0.0004**	**0.0008**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		**0.0003**	<0.0002	<0.0002	**0.0002**	**0.0003**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS078	SS079	SS080	SS081	SS082
				Sampling date / time	21-Aug-2021 17:24	21-Aug-2021 17:25	21-Aug-2021 17:26	21-Aug-2021 17:28	21-Aug-2021 17:29
Compound	CAS Number	LOR	Unit		EP2110221-066	EP2110221-067	EP2110221-068	EP2110221-069	EP2110221-070
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.150**	**0.188**	**0.0846**	**0.0324**	**0.330**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0294**	**0.0175**	**0.0088**	**0.0159**	**0.0392**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0153**	**0.0061**	**0.0035**	**0.0084**	**0.0177**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.207**	**0.224**	**0.110**	**0.0604**	**0.390**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.191**	**0.217**	**0.106**	**0.0514**	**0.372**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**103**	**99.5**	**100**	**113**	**102**
13C8-PFOA	----	0.0002	%		**88.0**	**92.5**	**96.5**	**91.0**	**90.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC115	QC116	----	----	----
			Sampling date / time	21-Aug-2021 17:30	21-Aug-2021 17:30	----	----	----
Compound	CAS Number	LOR	Unit	EP2110221-071	EP2110221-072	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**0.8**	**1.4**	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**9.0**	**9.1**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	**0.002**	**0.001**	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0014**	**0.0013**	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0063**	**0.0016**	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0005**	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0050**	**0.0006**	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0004**	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0021**	**0.0004**	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	**0.0011**	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	**0.0007**	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC115	QC116	----	----	----
			Sampling date / time	21-Aug-2021 17:30	21-Aug-2021 17:30	----	----	----
Compound	CAS Number	LOR	Unit	EP2110221-071	EP2110221-072	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	**1.22**	**0.117**	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	**0.125**	**0.0209**	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	**0.0540**	**0.0094**	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**1.42**	**0.152**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**1.36**	**0.142**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**103**	**106**	----	----	----
13C8-PFOA	----	0.0002	%	**84.0**	**89.0**	----	----	----

Surrogate Control Limits

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

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

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA150: Soil Classification based on Particle Size

(SOIL) EA152: Soil Particle Density

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP231C: Perfluoroalkyl Sulfonamides

(WATER) EP231A: Perfluoroalkyl Sulfonic Acids

(WATER) EP231B: Perfluoroalkyl Carboxylic Acids

(WATER) EP231P: PFAS Sums

(WATER) EP231S: PFAS Surrogate

(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids

(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids

(SOIL) EP231C: Perfluoroalkyl Sulfonamides

(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids

(SOIL) EP231P: PFAS Sums

(SOIL) EP231S: PFAS Surrogate

(SOIL) EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)

(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology). Only applies to samples EP2110221 (001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, 021, 023, 024, 025, 026, 027, 028, 029, 030, 031, 032, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 047, 048, 049, 050, 051, 052, 053, 054, 055, 056, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 069, 070, 071, 072).

(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EP2110221**	Page	: 1 of 28
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021
Order number	: CW1173100	Date Analysis Commenced	: 06-Sep-2021
C-O-C number	: ----	Issue Date	: 20-Sep-2021
Sampler	: Mark Harris		
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Quote number	: EP/726/21		
No. of samples received	: 72		
No. of samples analysed	: 72		

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

This report supersedes any previous report(s) with this reference. Results 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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Vincent Emerton-Bell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3893771)									
EP2110221-022	SS003	EG005T: Iron	7439-89-6	50	mg/kg	17.1 %	164000	4.3	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 3882657)									
EP2110221-022	SS003	EA001: pH (CaCl2)	----	0.1	pH Unit	7.5	7.6	1.3	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 3882645)									
EP2110221-022	SS003	EA002: pH Value	----	0.1	pH Unit	8.0	8.1	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 3882646)									
EP2110221-022	SS003	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	683	666	2.5	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3889948)									
EP2110221-022	SS003	EA055: Moisture Content	----	0.1	%	2.1	2.1	0.0	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894067)									
EP2110221-003	SD003	EA055: Moisture Content	----	0.1	%	24.2	22.4	7.8	0% - 20%
EP2110221-014	SD005	EA055: Moisture Content	----	0.1	%	21.4	21.5	0.0	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894068)									
EP2110221-024	SS005	EA055: Moisture Content	----	0.1	%	0.2	0.5	85.5	No Limit
EP2110221-036	SS040	EA055: Moisture Content	----	0.1	%	1.7	1.5	7.7	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894069)									
EP2110221-045	SS052	EA055: Moisture Content	----	0.1	%	1.3	0.8	47.5	0% - 50%
EP2110221-056	SS068	EA055: Moisture Content	----	0.1	%	1.0	1.3	23.9	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894070)									
EP2110221-066	SS078	EA055: Moisture Content	----	0.1	%	1.4	1.4	0.0	0% - 50%
ED007: Exchangeable Cations (QC Lot: 3887454)									
EP2110221-033	SS014	ED007: Exchangeable Sodium Percent	----	0.1	%	0.4	0.4	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED007: Exchangeable Cations (QC Lot: 3887454) - continued									
EP2110221-033	SS014	ED007: Exchangeable Calcium	----	0.1	meq/100g	16.2	16.8	3.5	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	0.6	0.6	0.0	No Limit
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.4	0.4	0.0	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.0	No Limit
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	17.3	17.9	3.5	0% - 20%
ED008: Exchangeable Cations (QC Lot: 3887408)									
EP2110221-022	SS003	ED008: Exchangeable Calcium	----	0.1	meq/100g	4.3	4.0	6.8	0% - 20%
		ED008: Exchangeable Magnesium	----	0.1	meq/100g	0.7	0.8	0.0	No Limit
		ED008: Exchangeable Potassium	----	0.1	meq/100g	0.3	0.4	0.0	No Limit
		ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.0	No Limit
		ED008: Cation Exchange Capacity	----	0.1	meq/100g	5.5	5.2	5.0	0% - 20%
EP004: Organic Matter (QC Lot: 3891203)									
EP2110221-022	SS003	EP004: Organic Matter	----	0.5	%	0.6	0.5	0.0	No Limit
		EP004: Total Organic Carbon	----	0.5	%	<0.5	<0.5	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3890437)									
EP2110221-002	SD002	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110221-011	SD011	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3890439)									
EP2110221-021	SS002	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110221-031	SS012	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3890439) - continued									
EP2110221-031	SS012	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3890845)									
EP2110221-041	SS048	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110221-051	QC110	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3890853)									
EP2110221-061	SS073	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110221-071	QC115	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890437)									
EP2110221-002	SD002	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP2110221-011	SD011	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890437) - continued									
EP2110221-011	SD011	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890439)									
EP2110221-021	SS002	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0007	0.0008	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0007	0.0008	16.6	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP2110221-031	SS012	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890845)									
EP2110221-041	SS048	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0026	0.0025	6.5	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0008	0.0008	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890845) - continued									
EP2110221-041	SS048	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP2110221-051	QC110	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890853)									
EP2110221-061	SS073	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0011	0.0012	10.8	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0006	0.0007	22.2	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0005	0.0007	21.7	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP2110221-071	QC115	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0014	0.0015	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0063	0.0066	4.2	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0050	0.0046	8.5	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0021	0.0018	11.3	0% - 50%
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0011	0.0009	19.6	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	0.0007	0.0005	28.8	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	0.002	0.002	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890437)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890437) - continued									
EP2110221-002	SD002	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110221-011	SD011	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890439)									
EP2110221-021	SS002	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110221-031	SS012	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890439) - continued									
EP2110221-031	SS012	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890845)									
EP2110221-041	SS048	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110221-051	QC110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890853)									
EP2110221-061	SS073	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890853) - continued									
EP2110221-061	SS073	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110221-071	QC115	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3890437)									
EP2110221-002	SD002	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110221-011	SD011	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory 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: 3890437) - continued									
EP2110221-011	SD011	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3890439)									
EP2110221-021	SS002	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0007	0.0008	16.7	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0007	0.0008	0.0	No Limit
EP2110221-031	SS012	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0148	0.0124	18.2	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0006	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3890845)									
EP2110221-041	SS048	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0244	0.0245	0.6	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0022	0.0024	9.9	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0009	0.0009	0.0	No Limit
EP2110221-051	QC110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3890853)									
EP2110221-061	SS073	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.219	0.251	13.8	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3890853) - continued									
EP2110221-061	SS073	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0365	0.0434	17.1	0% - 20%
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0178	0.0206	14.7	0% - 20%
EP2110221-071	QC115	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	1.22	1.11	10.1	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.125	0.104	19.0	0% - 20%
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0540	0.0456	16.7	0% - 20%

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3893771)								
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	78.5	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 3882657)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	99.5	98.8	101
				----	7 pH Unit	100	99.2	101
EA002: pH 1:5 (Soils) (QCLot: 3882645)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	100	70.0	130
				----	7 pH Unit	100	70.0	130
EA010: Conductivity (1:5) (QCLot: 3882646)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	100	93.6	106
ED007: Exchangeable Cations (QCLot: 3887454)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	21.6 meq/100g	97.6	82.9	117
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.76 meq/100g	94.1	78.4	119
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	1 meq/100g	107	87.9	129
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.9 meq/100g	106	92.9	132
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	25.3 meq/100g	97.9	84.7	117
ED007: Exchangeable Sodium Percent	----	0.1	%	<0.1	----	----	----	----
ED008: Exchangeable Cations (QCLot: 3887408)								
ED008: Exchangeable Calcium	----	0.1	meq/100g	<0.1	22.1 meq/100g	94.9	78.7	111
ED008: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.56 meq/100g	88.9	77.6	111
ED008: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.91 meq/100g	101	86.9	116
ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.38 meq/100g	107	72.3	129
ED008: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	24.95 meq/100g	94.9	79.9	110
EP004: Organic Matter (QCLot: 3891203)								
EP004: Organic Matter	----	0.5	%	<0.5	2.3 %	101	70.0	120
				<0.5	85 %	87.4	70.0	120
EP004: Total Organic Carbon	----	0.5	%	<0.5	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890437)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	59.0	134

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890439)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.0	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890853)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890437)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	77.6	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.2	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	77.6	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890439)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	73.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.4	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	69.0	133

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890439) - continued								
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	71.2	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	71.4	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	73.7	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890853)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	73.4	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.1	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890437)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.3	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.1	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.2	65.1	134

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890437) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890439)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.8	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.5	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.5	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	75.3	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.6	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.1	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.6	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.0	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.8	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.2	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890853)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.8	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.3	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.0	63.0	144

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890853) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890437)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	79.2	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	83.2	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	77.6	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890439)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.4	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.0	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	77.6	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.8	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	77.2	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.0	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890853)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.2	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	84.8	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.2	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3893542)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	74.8	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	82.8	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	74.8	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	81.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3896137)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	76.4	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	78.0	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	79.2	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	77.2	65.0	140

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3896137) - continued								
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	73.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3897429)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	83.6	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	77.6	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	86.4	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	80.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3897870)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	76.8	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	82.4	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	87.6	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	72.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3903424)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	88.8	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	87.6	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	79.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3903426)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	93.2	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	91.6	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	88.0	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3904271)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	81.6	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	96.8	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	81.2	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	86.8	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	70.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3893542)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	77.7	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: 3893542) - continued								
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	75.6	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	72.0	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	84.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	85.2	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	89.2	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	94.8	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	90.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	97.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3896137)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	80.8	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	78.0	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	82.4	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	87.2	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	76.8	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	66.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	83.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3897429)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	80.6	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	92.0	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	82.0	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	106	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	84.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	95.5	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3897870)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	83.4	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	72.0	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: 3897870) - continued								
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	83.6	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	90.8	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	96.4	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	80.4	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	99.7	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3903424)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	89.1	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	84.0	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	87.2	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	94.4	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	89.2	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	102	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	86.6	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3903426)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	75.9	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	85.2	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	106	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	93.2	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	90.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	89.6	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	104	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	114	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	119	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	79.4	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3904271)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	85.7	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	92.8	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	92.8	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	96.0	71.0	133

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3904271) - continued								
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	96.8	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	91.6	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	89.2	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	78.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	92.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3893542)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	78.4	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	90.6	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	84.2	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	69.9	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	66.4	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	108	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	94.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3896137)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	75.6	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	88.2	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	75.5	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	81.4	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	82.4	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	79.2	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	80.4	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3897429)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	96.3	68.0	141

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: 3897429) - continued								
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	89.8	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	84.2	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	91.5	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	82.4	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3897870)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	79.6	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	83.7	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	83.8	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	99.7	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	85.0	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	75.6	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	88.4	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3903424)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	102	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	89.3	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	90.1	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	83.2	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	90.8	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	90.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3903426)								

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: 3903426) - continued								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	99.2	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	75.4	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	89.6	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	92.6	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	88.4	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3904271)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	94.0	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	92.5	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	89.6	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	85.0	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	115	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	90.0	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3893542)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	81.6	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	76.0	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	88.8	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	83.2	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3896137)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	79.2	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	79.6	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	85.2	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	76.8	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3897429)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	84.4	63.0	143

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: 3897429) - continued								
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	86.0	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	94.4	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	79.2	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3897870)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	77.6	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	86.4	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	99.6	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	80.0	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3903424)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	84.8	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	120	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	83.6	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	80.4	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3903426)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	86.4	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	123	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	90.8	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	88.4	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3904271)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	76.8	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	124	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	126	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	75.6	60.9	136
EP231P: PFAS Sums (QCLot: 3893542)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3896137)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3897429)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----

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: 3897870)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3903424)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3903426)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3904271)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890437)							
EP2110221-002	SD002	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	81.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	88.8	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	84.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	94.8	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	96.4	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	105	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890439)							
EP2110221-021	SS002	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	79.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	82.4	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	86.4	67.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890439) - continued							
EP2110221-021	SS002	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	89.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	99.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	104	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890845)							
EP2110221-041	SS048	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	78.4	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	73.2	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	84.0	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	93.2	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	102	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	100	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890853)							
EP2110221-061	SS073	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	114	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	91.2	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	114	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	78.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	92.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	114	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890437)							
EP2110221-002	SD002	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	82.7	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	88.8	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	95.6	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	90.0	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	95.6	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	90.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	106	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	98.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	94.8	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	84.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	91.5	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890439)							
EP2110221-021	SS002	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	80.9	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	92.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	94.4	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	90.8	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	98.0	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	91.6	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	100	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	96.8	64.0	136

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890439) - continued							
EP2110221-021	SS002	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	99.2	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	85.2	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	86.8	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890845)							
EP2110221-041	SS048	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	90.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	95.6	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	108	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	88.4	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	116	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	107	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	114	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.6	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	99.6	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	85.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	87.7	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890853)							
EP2110221-061	SS073	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	97.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	76.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	79.6	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	116	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	118	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	106	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	119	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	111	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	115	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	113	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890437)							
EP2110221-002	SD002	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	91.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	98.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	98.7	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	93.9	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	94.7	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	95.2	63.0	144

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890437) - continued							
EP2110221-002	SD002	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	96.0	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890439)							
EP2110221-021	SS002	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	91.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	104	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	99.8	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.1	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	94.6	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	88.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	100	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890845)							
EP2110221-041	SS048	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	86.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	97.9	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	96.3	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	84.1	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	93.6	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	91.2	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	102	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890853)							
EP2110221-061	SS073	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	99.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	110	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	84.0	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	77.7	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	83.0	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	75.2	63.0	144

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890853) - continued							
EP2110221-061	SS073	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	82.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890437)							
EP2110221-002	SD002	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	90.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	95.6	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	87.6	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890439)							
EP2110221-021	SS002	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	93.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	94.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	96.0	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	125	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890845)							
EP2110221-041	SS048	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	83.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	# Not Determined	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	136	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	106	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890853)							
EP2110221-061	SS073	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	110	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	# Not Determined	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	# Not Determined	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	# Not Determined	69.2	143

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2110221**	Page	: 1 of 28
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)	Issue Date	: 20-Sep-2021
Sampler	: Mark Harris	No. of samples received	: 72
Order number	: CW1173100	No. of samples analysed	: 72

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

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110221--041	SS048	**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.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110221--061	SS073	**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.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110221--061	SS073	**8:2 Fluorotelomer sulfonic acid (8:2 FTS)**	39108-34-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110221--061	SS073	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved							
SS003,	SS014	06-Sep-2021	27-Aug-2021	**10**	----	----	----
Soil Glass Jar - Unpreserved							
SS069,	SS080	06-Sep-2021	28-Aug-2021	**9**	----	----	----
EA002: pH 1:5 (Soils)							
Soil Glass Jar - Unpreserved							
SS003,	SS014	06-Sep-2021	27-Aug-2021	**10**	----	----	----
Soil Glass Jar - Unpreserved							
SS069,	SS080	06-Sep-2021	28-Aug-2021	**9**	----	----	----
EA010: Conductivity (1:5)							
Soil Glass Jar - Unpreserved							
SS003,	SS014	06-Sep-2021	27-Aug-2021	**10**	----	----	----
Soil Glass Jar - Unpreserved							
SS069,	SS080	06-Sep-2021	28-Aug-2021	**9**	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar							
QC104, SD003,	SD002, SD004	----	----	----	09-Sep-2021	02-Sep-2021	**7**

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA055: Moisture Content (Dried @ 105-110°C) - Analysis Holding Time Compliance						
HDPE Soil Jar						
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS015, SS016	----	----	----	09-Sep-2021	03-Sep-2021	**6**
HDPE Soil Jar						
SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS070, SS071, SS072, SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS081, SS082, QC115, QC116	----	----	----	09-Sep-2021	04-Sep-2021	**5**
Soil Glass Jar - Unpreserved						
SS003, SS014	----	----	----	08-Sep-2021	03-Sep-2021	**5**
Soil Glass Jar - Unpreserved						
SS069, SS080	----	----	----	08-Sep-2021	04-Sep-2021	**4**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Total Metals by ICP-AES	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

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	82	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	82	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container* / Client Sample ID(s)		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	Due for extraction	Evaluation	*Date analysed*	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
SS003,	SS014	**20-Aug-2021**	**06-Sep-2021**	27-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
Soil Glass Jar - Unpreserved (EA001)								
SS069,	SS080	**21-Aug-2021**	**06-Sep-2021**	28-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
EA002: pH 1:5 (Soils)								
Soil Glass Jar - Unpreserved (EA002)								
SS003,	SS014	**20-Aug-2021**	**06-Sep-2021**	27-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
Soil Glass Jar - Unpreserved (EA002)								
SS069,	SS080	**21-Aug-2021**	**06-Sep-2021**	28-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
EA010: Conductivity (1:5)								
Soil Glass Jar - Unpreserved (EA010)								
SS003,	SS014	**20-Aug-2021**	**06-Sep-2021**	27-Aug-2021	×	**06-Sep-2021**	04-Oct-2021	✓
Soil Glass Jar - Unpreserved (EA010)								
SS069,	SS080	**21-Aug-2021**	**06-Sep-2021**	28-Aug-2021	×	**06-Sep-2021**	04-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
QC104, SD002, SD003, SD004	**19-Aug-2021**	**----**	----	----	**09-Sep-2021**	02-Sep-2021	×
HDPE Soil Jar (EA055)							
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS015, SS016	**20-Aug-2021**	**----**	----	----	**09-Sep-2021**	03-Sep-2021	×
HDPE Soil Jar (EA055)							
SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS070, SS071, SS072, SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS081, SS082, QC115, QC116	**21-Aug-2021**	**----**	----	----	**09-Sep-2021**	04-Sep-2021	×
Soil Glass Jar - Unpreserved (EA055)							
SS003, SS014	**20-Aug-2021**	**----**	----	----	**08-Sep-2021**	03-Sep-2021	×
Soil Glass Jar - Unpreserved (EA055)							
SS069, SS080	**21-Aug-2021**	**----**	----	----	**08-Sep-2021**	04-Sep-2021	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA150: Soil Classification based on Particle Size							
Soil Glass Jar - Unpreserved (EA150H)							
SS003, SS014	**20-Aug-2021**	**----**	----	----	**15-Sep-2021**	16-Feb-2022	✓
Soil Glass Jar - Unpreserved (EA150H)							
SS069, SS080	**21-Aug-2021**	**----**	----	----	**15-Sep-2021**	17-Feb-2022	✓
EA152: Soil Particle Density							
Soil Glass Jar - Unpreserved (EA152)							
SS003, SS014	**20-Aug-2021**	**----**	----	----	**15-Sep-2021**	16-Feb-2022	✓
Soil Glass Jar - Unpreserved (EA152)							
SS069, SS080	**21-Aug-2021**	**----**	----	----	**15-Sep-2021**	17-Feb-2022	✓
ED007: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED007)							
SS014	**20-Aug-2021**	**09-Sep-2021**	17-Sep-2021	✓	**09-Sep-2021**	17-Sep-2021	✓
ED008: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED008)							
SS003	**20-Aug-2021**	**09-Sep-2021**	17-Sep-2021	✓	**09-Sep-2021**	17-Sep-2021	✓
Soil Glass Jar - Unpreserved (ED008)							
SS069, SS080	**21-Aug-2021**	**09-Sep-2021**	18-Sep-2021	✓	**09-Sep-2021**	18-Sep-2021	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
SS003, SS014	**20-Aug-2021**	**09-Sep-2021**	16-Feb-2022	✓	**09-Sep-2021**	16-Feb-2022	✓
Soil Glass Jar - Unpreserved (EG005T)							
SS069, SS080	**21-Aug-2021**	**09-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	17-Feb-2022	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)							
QC104, SD002, SD003, SD004	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)							
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)							
SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS014, SS015, SS016	**20-Aug-2021**	**09-Sep-2021**	16-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)							
SS040, QC109, SS043, SS041, SS042	**21-Aug-2021**	**09-Sep-2021**	17-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)							
SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067	**21-Aug-2021**	**10-Sep-2021**	17-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P)							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel) - Continued								
SS068,	SS069,	**21-Aug-2021**	**14-Sep-2021**	17-Feb-2022	✓	**----**	----	----
SS070,	SS071,							
SS072,	SS073,							
SS074,	SS075,							
SS076,	SS077,							
SS078,	SS079,							
SS080,	SS081,							
SS082,	QC115,							
QC116								
EP004: Organic Matter								
Soil Glass Jar - Unpreserved (EP004)								
SS003,	SS014	**20-Aug-2021**	**13-Sep-2021**	17-Sep-2021	✓	**13-Sep-2021**	17-Sep-2021	✓
Soil Glass Jar - Unpreserved (EP004)								
SS069,	SS080	**21-Aug-2021**	**13-Sep-2021**	18-Sep-2021	✓	**13-Sep-2021**	18-Sep-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QC104, SD002, SD003, SD004	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS014, SS015, SS016	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS069, SS070, SS071, SS072	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082, QC115, QC116	**21-Aug-2021**	**09-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QC104, SD002, SD003, SD004	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS014, SS015, SS016	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS069, SS070, SS071, SS072	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082, QC115, QC116	**21-Aug-2021**	**09-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QC104, SD002, SD003, SD004	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS014, SS015, SS016	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS069, SS070, SS071, SS072	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082, QC115, QC116	**21-Aug-2021**	**09-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QC104, SD002, SD003, SD004	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS014, SS015, SS016	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS069, SS070, SS071, SS072	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082, QC115, QC116	**21-Aug-2021**	**09-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
QC104, SD002, SD003, SD004	**19-Aug-2021**	**08-Sep-2021**	15-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD010, SD005, SD012, SD013, SD014, SD007, SD006, SS001, SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009, SS010, SS011, SS012, SS013, SS014, SS015, SS016	**20-Aug-2021**	**08-Sep-2021**	16-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS040, QC109, SS043, SS041, SS042, SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056, SS057, QC110, SS058, QC111, QC112, SS067, SS068, SS069, SS070, SS071, SS072	**21-Aug-2021**	**08-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	18-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082, QC115, QC116	**21-Aug-2021**	**09-Sep-2021**	17-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-SUT)							
QC104, SD002, SD003, SD004, SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD005, SD012, SD013, SD014, SD007, SD006, SS001	**08-Sep-2021**	**10-Sep-2021**	07-Mar-2022	✓	**10-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SD010	**08-Sep-2021**	**13-Sep-2021**	07-Mar-2022	✓	**13-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009	**09-Sep-2021**	**10-Sep-2021**	08-Mar-2022	✓	**10-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS010, SS011, SS012, SS013, SS014, SS015, SS016, SS040, QC109, SS043, SS041, SS042	**09-Sep-2021**	**13-Sep-2021**	08-Mar-2022	✓	**13-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056	**10-Sep-2021**	**13-Sep-2021**	09-Mar-2022	✓	**13-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS057, QC110, SS058, QC111, QC112, SS067	**10-Sep-2021**	**15-Sep-2021**	09-Mar-2022	✓	**16-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**15-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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							
SS068, SS069, SS070, SS071, SS072	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC115, QC116	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-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-SUT)							
QC104, SD002, SD003, SD004, SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD005, SD012, SD013, SD014, SD007, SD006, SS001	**08-Sep-2021**	**10-Sep-2021**	07-Mar-2022	✓	**10-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SD010	**08-Sep-2021**	**13-Sep-2021**	07-Mar-2022	✓	**13-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009	**09-Sep-2021**	**10-Sep-2021**	08-Mar-2022	✓	**10-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS010, SS011, SS012, SS013, SS014, SS015, SS016, SS040, QC109, SS043, SS041, SS042	**09-Sep-2021**	**13-Sep-2021**	08-Mar-2022	✓	**13-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056	**10-Sep-2021**	**13-Sep-2021**	09-Mar-2022	✓	**13-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS057, QC110, SS058, QC111, QC112, SS067	**10-Sep-2021**	**15-Sep-2021**	09-Mar-2022	✓	**16-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**15-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids - Continued							
SS068, SS069, SS070, SS071, SS072	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC115, QC116	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-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-SUT)							
QC104, SD002, SD003, SD004, SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD005, SD012, SD013, SD014, SD007, SD006, SS001	**08-Sep-2021**	**10-Sep-2021**	07-Mar-2022	✓	**10-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SD010	**08-Sep-2021**	**13-Sep-2021**	07-Mar-2022	✓	**13-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009	**09-Sep-2021**	**10-Sep-2021**	08-Mar-2022	✓	**10-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS010, SS011, SS012, SS013, SS014, SS015, SS016, SS040, QC109, SS043, SS041, SS042	**09-Sep-2021**	**13-Sep-2021**	08-Mar-2022	✓	**13-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056	**10-Sep-2021**	**13-Sep-2021**	09-Mar-2022	✓	**13-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS057, QC110, SS058, QC111, QC112, SS067	**10-Sep-2021**	**15-Sep-2021**	09-Mar-2022	✓	**16-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**15-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides - Continued							
SS068, SS069, SS070, SS071, SS072	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC115, QC116	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-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-SUT)							
QC104, SD002, SD003, SD004, SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD005, SD012, SD013, SD014, SD007, SD006, SS001	**08-Sep-2021**	**10-Sep-2021**	07-Mar-2022	✓	**10-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SD010	**08-Sep-2021**	**13-Sep-2021**	07-Mar-2022	✓	**13-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009	**09-Sep-2021**	**10-Sep-2021**	08-Mar-2022	✓	**10-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS010, SS011, SS012, SS013, SS014, SS015, SS016, SS040, QC109, SS043, SS041, SS042	**09-Sep-2021**	**13-Sep-2021**	08-Mar-2022	✓	**13-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056	**10-Sep-2021**	**13-Sep-2021**	09-Mar-2022	✓	**13-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS057, QC110, SS058, QC111, QC112, SS067	**10-Sep-2021**	**15-Sep-2021**	09-Mar-2022	✓	**16-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**15-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued							
SS068, SS069, SS070, SS071, SS072	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC115, QC116	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-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-SUT)							
QC104, SD002, SD003, SD004, SD017, SD025, SD009, SD008, SD016, SD015, SD011, QC106, SD005, SD012, SD013, SD014, SD007, SD006, SS001	**08-Sep-2021**	**10-Sep-2021**	07-Mar-2022	✓	**10-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SD010	**08-Sep-2021**	**13-Sep-2021**	07-Mar-2022	✓	**13-Sep-2021**	07-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS002, SS003, SS004, SS005, SS006, SS007, SS008, SS009	**09-Sep-2021**	**10-Sep-2021**	08-Mar-2022	✓	**10-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS010, SS011, SS012, SS013, SS014, SS015, SS016, SS040, QC109, SS043, SS041, SS042	**09-Sep-2021**	**13-Sep-2021**	08-Mar-2022	✓	**13-Sep-2021**	08-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS048, SS050, SS049, SS051, SS052, SS053, SS054, SS055, SS056	**10-Sep-2021**	**13-Sep-2021**	09-Mar-2022	✓	**13-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS057, QC110, SS058, QC111, QC112, SS067	**10-Sep-2021**	**15-Sep-2021**	09-Mar-2022	✓	**16-Sep-2021**	09-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS073, SS074, SS075, SS076, SS077, SS078, SS079, SS080, SS081, SS082	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**15-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums - Continued							
SS068, SS069, SS070, SS071, SS072	**14-Sep-2021**	**15-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
QC115, QC116	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Electrical Conductivity (1:5)	EA010	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	80	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Electrical Conductivity (1:5)	EA010	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	80	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	80	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	80	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	0	9	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	82	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	7	82	8.54	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	7	82	**8.54**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	82	**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
pH in soil using a 0.01M CaCl2 extract	* EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3
Soil Particle Density	EA152	SOIL	Soil Particle Density by AS 1289.3.5.1: Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM Schedule B(3).
Exchangeable Cations with pre-treatment	ED008	SOIL	In house: Referenced to Rayment & Lyons Method 15A2. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Organic Matter	EP004	SOIL	In house: Referenced to AS1289.4.1.1. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	SOIL	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Lyons method 15A1. A 1M NH4Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Deionised Water Leach - Plastic Leaching Vessel	EN60-DIa-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Organic Matter	EP004-PR	SOIL	In house: Referenced to AS1289.4.1.1. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM Schedule B(3).
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: MD 9.45 1/9/21	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~001~~	QC104		19/08/2021 08:38 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~002~~	SD002		19/08/2021 08:41 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~003~~	SD003		19/08/2021 10:18 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~004~~	SD004		19/08/2021 11:02 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~005~~	SD017		19/08/2021 04:59 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~006~~	SD025		20/08/2021 08:20 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~007~~	SD009		20/08/2021 10:52 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~008~~	SD008		20/08/2021 10:56 AM	Soil	ALS: 2 Non ALS: 0	No		X		
009	SD016		20/08/2021 11:14 AM	Soil	ALS: 2 Non ALS: 0	No		X		

Environmental Division
Perth
Work Order Reference
EP2110231



Telephone : -- 61-8-9406 1301

CHAIN OF CUSTODY

ALS COC#: 26152 *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	SD015		20/08/2021 12:11 PM	Soil	ALS: 2 Non ALS: 0	No		X		
011	SD011		20/08/2021 02:36 PM	Soil	ALS: 2 Non ALS: 0	No		X		
012	QC106		20/08/2021 02:37 PM	Soil	ALS: 2 Non ALS: 0	No		X		
013	SD010		20/08/2021 02:55 PM	Soil	ALS: 2 Non ALS: 0	No		X		
014	SD005		20/08/2021 03:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
015	SD012		20/08/2021 03:21 PM	Soil	ALS: 2 Non ALS: 0	No		X		
016	SD013		20/08/2021 03:24 PM	Soil	ALS: 2 Non ALS: 0	No		X		
017	SD014		20/08/2021 03:42 PM	Soil	ALS: 2 Non ALS: 0	No		X		
018	SD007		20/08/2021 03:44 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: **26152** *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~019~~	SD006		20/08/2021 03:45 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~020~~	SS001		20/08/2021 05:27 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~021~~	SS002		20/08/2021 05:28 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~022~~	SS003		20/08/2021 05:29 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
~~023~~	SS004		20/08/2021 05:38 PM	Soil	ALS: 2 Non ALS: 0	No		X		
024	SS005		20/08/2021 05:39 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~025~~	SS006		20/08/2021 05:40 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~026~~	SS007		20/08/2021 05:44 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~027~~	SS008		20/08/2021 05:45 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~028~~	SS009		20/08/2021 05:46 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~029~~	SS010		20/08/2021 05:47 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~030~~	SS011		20/08/2021 05:48 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~031~~	SS012		20/08/2021 05:48 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~032~~	SS013		20/08/2021 05:49 PM	Soil	ALS: 2 Non ALS: 0	No		X		
033	SS014		20/08/2021 05:51 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
~~034~~	SS015		20/08/2021 05:52 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~035~~	SS016		20/08/2021 05:53 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~036~~	SS040		21/08/2021 08:20 AM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	QC109		21/08/2021 08:23 AM	Soil	ALS: 2 Non ALS: 0	No		X		
038	SS043		21/08/2021 08:32 AM	Soil	ALS: 2 Non ALS: 0	No		X		
039	SS041		21/08/2021 08:42 AM	Soil	ALS: 2 Non ALS: 0	No		X		
040	SS042		21/08/2021 08:42 AM	Soil	ALS: 2 Non ALS: 0	No		X		
041	SS048		21/08/2021 09:53 AM	Soil	ALS: 2 Non ALS: 0	No		X		
042	SS050		21/08/2021 09:54 AM	Soil	ALS: 2 Non ALS: 0	No		X		
043	SS049		21/08/2021 09:57 AM	Soil	ALS: 2 Non ALS: 0	No		X		
044	SS051		21/08/2021 10:03 AM	Soil	ALS: 2 Non ALS: 0	No		X		
045	SS052		21/08/2021 10:05 AM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~046~~	SS053		21/08/2021 10:05 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~047~~	SS054		21/08/2021 10:08 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~048~~	SS055		21/08/2021 10:15 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~049~~	SS056		21/08/2021 10:17 AM	Soil	ALS: 2 Non ALS: 0	No	X	X		
~~050~~	SS057		21/08/2021 10:45 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~051~~	QC110		21/08/2021 10:46 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~052~~	SS058		21/08/2021 10:48 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~053~~	QC111		21/08/2021 01:13 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~054~~	QC112		21/08/2021 01:14 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	SS067		21/08/2021 05:01 PM	Soil	ALS: 2 Non ALS: 0	No		X		
056	SS068		21/08/2021 05:16 PM	Soil	ALS: 2 Non ALS: 0	No		X		
057	SS069		21/08/2021 05:17 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
058	SS070		21/08/2021 05:17 PM	Soil	ALS: 2 Non ALS: 0	No		X		
059	SS071		21/08/2021 05:18 PM	Soil	ALS: 2 Non ALS: 0	No		X		
060	SS072		21/08/2021 05:19 PM	Soil	ALS: 2 Non ALS: 0	No		X		
061	SS073		21/08/2021 05:20 PM	Soil	ALS: 2 Non ALS: 0	No		X		
062	SS074		21/08/2021 05:21 PM	Soil	ALS: 2 Non ALS: 0	No		X		
063	SS075		21/08/2021 05:21 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: **26152** *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris
PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

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RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	SS076		21/08/2021 05:22 PM	Soil	ALS: 2 Non ALS: 0	No		X		
065	SS077		21/08/2021 05:23 PM	Soil	ALS: 2 Non ALS: 0	No		X		
066	SS078		21/08/2021 05:24 PM	Soil	ALS: 2 Non ALS: 0	No		X		
067	SS079		21/08/2021 05:25 PM	Soil	ALS: 2 Non ALS: 0	No		X		
068	SS080		21/08/2021 05:26 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
069	SS081		21/08/2021 05:28 PM	Soil	ALS: 2 Non ALS: 0	No		X		
070	SS082		21/08/2021 05:29 PM	Soil	ALS: 2 Non ALS: 0	No		X		
071	QC115		21/08/2021 05:30 PM	Soil	ALS: 2 Non ALS: 0	No		X		
072	QC116		21/08/2021 05:30 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 26152 *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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PRIMARY SAMPLER: Mark Harris

CONTACT PH:
QUOTE NO: EP/726/21

SAMPLER MOBILE:
/ EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	ND DATE TIME: 11/9/21@945	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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
1 073	QC117		22/08/2021 06:37 AM	Soil	ALS: 2 Non ALS: 0	No		X		
2 074	SS111		22/08/2021 06:39 AM	Soil	ALS: 2 Non ALS: 0	No		X		
3 075	SS112		22/08/2021 06:40 AM	Soil	ALS: 2 Non ALS: 0	No		X		
4 076	SS113		22/08/2021 06:40 AM	Soil	ALS: 2 Non ALS: 0	No		X		
5 077	SS114		22/08/2021 06:41 AM	Soil	ALS: 4 Non ALS: 0	No	X	X		
6 078	SS062		22/08/2021 10:25 AM	Soil	ALS: 2 Non ALS: 0	No		X		
7 079	SS059		22/08/2021 10:28 AM	Soil	ALS: 2 Non ALS: 0	No		X		
8 080	SS060		22/08/2021 10:29 AM	Soil	ALS: 2 Non ALS: 0	No		X		
9 081	SS061		22/08/2021 10:31 AM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

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PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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EMAIL INVOICES TO: laura.beams@cardno.com.au

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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~082~~ 10	SS066		22/08/2021 10:32 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~083~~ 11	SS063		22/08/2021 10:34 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~084~~ 12	SS064		22/08/2021 10:36 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~085~~ 13	SS065		22/08/2021 10:39 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~086~~ 14	SS084		22/08/2021 11:21 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~087~~ 15	SD Pond 2		22/08/2021 11:22 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~088~~ 16	SD Pond 1		22/08/2021 11:32 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~089~~ 17	SS083		22/08/2021 11:33 AM	Soil	ALS: 2 Non ALS: 0	No		X		
~~090~~ 18	SS085		22/08/2021 11:34 AM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

(ALS) COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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

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PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
091 19	SS086		22/08/2021 11:36 AM	Soil	ALS: 2 Non ALS: 0	No		X		
092 20	SS099		22/08/2021 02:33 PM	Soil	ALS: 2 Non ALS: 0	No		X		
093 21	SS101		22/08/2021 02:38 PM	Soil	ALS: 2 Non ALS: 0	No		X		
094 22	SS102		22/08/2021 02:40 PM	Soil	ALS: 2 Non ALS: 0	No		X		
095 23	SS100		22/08/2021 02:41 PM	Soil	ALS: 2 Non ALS: 0	No		X		
096 24	SS115		22/08/2021 03:04 PM	Soil	ALS: 2 Non ALS: 0	No		X		
097 25	SS116		22/08/2021 03:04 PM	Soil	ALS: 2 Non ALS: 0	No		X		
098 26	SS117		22/08/2021 03:05 PM	Soil	ALS: 2 Non ALS: 0	No		X		
099 27	SS118		22/08/2021 03:06 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

(ALS) COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~100~~ 28	SD021		22/08/2021 03:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~101~~ 29	SD022		22/08/2021 03:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~102~~ 30	SS120		23/08/2021 01:46 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~103~~ 31	SS119		23/08/2021 01:47 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~104~~ 32	SS121		23/08/2021 01:49 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~105~~ 33	SS122		23/08/2021 01:50 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~106~~ 34	SS017		23/08/2021 03:55 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~107~~ 35	SS018		23/08/2021 03:56 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~108~~ 36	SS020		23/08/2021 03:57 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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EMAIL INVOICES TO: laura.beams@cardno.com.au

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~109~~ 37	SS019		23/08/2021 03:57 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~110~~ 38	SS021		23/08/2021 03:58 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~111~~ 39	SS022		23/08/2021 03:59 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~112~~ 40	SS023		23/08/2021 04:00 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~113~~ 41	SS024		23/08/2021 04:00 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~114~~ 42	SS025		23/08/2021 04:01 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~115~~ 43	SS026		23/08/2021 04:01 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~116~~ 44	SS027		23/08/2021 04:02 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~117~~ 45	QC125		23/08/2021 04:03 PM	Soil	ALS: 2 Non ALS: 0	No		X		

CHAIN OF CUSTODY

ALS COC#: 26152 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

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SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~118~~ 46	SS028		23/08/2021 04:04 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
~~119~~ 47	SS029		23/08/2021 04:06 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~120~~ 48	SS030		23/08/2021 04:06 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~121~~ 49	SS032		23/08/2021 04:07 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~122~~ 50	SS031		23/08/2021 04:07 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~123~~ 51	SS033		23/08/2021 04:08 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~124~~ 52	QC126		23/08/2021 04:09 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~125~~ 53	QC127		23/08/2021 04:10 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~126~~ 54	SS034		23/08/2021 04:10 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		

CHAIN OF CUSTODY

(ALS) COC#: 26152 *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

LABORATORY USE ONLY (Circle)

Custody Seal intact? 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	NEPM Soil Classification Suite SOIL	Primary Soil Suite SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~127~~ 55	SS035		23/08/2021 04:11 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~128~~ 56	SS036		23/08/2021 04:12 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~129~~ 57	SS037		23/08/2021 04:12 PM	Soil	ALS: 4 Non ALS: 0	No	X	X		
~~130~~ 58	SS038		23/08/2021 04:13 PM	Soil	ALS: 2 Non ALS: 0	No		X		
~~131~~ 59	SS039		23/08/2021 04:14 PM	Soil	ALS: 2 Non ALS: 0	No		X		
60	TBW738			W	2					
61	TBW739			W	2					
62	TBW742			W	2					
63	TBW743			W	2					
64	TBW744			W	2					
65	TBW748			W	2					

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	QC104	HDPE Soil Jar	200 mL	00621019043049	Grey	No	
001	QC104	HDPE Soil Jar	200 mL	00621019043115	Grey	No	
002	SD002	HDPE Soil Jar	200 mL	00621019043022	Grey	No	
002	SD002	HDPE Soil Jar	200 mL	00621019042988	Grey	No	
003	SD003	HDPE Soil Jar	200 mL	00621019043003	Grey	No	
003	SD003	HDPE Soil Jar	200 mL	00621019043113	Grey	No	
004	SD004	HDPE Soil Jar	200 mL	00621019042991	Grey	No	
004	SD004	HDPE Soil Jar	200 mL	00621019043001	Grey	No	
005	SD017	HDPE Soil Jar	200 mL	00621019043101	Grey	No	
005	SD017	HDPE Soil Jar	200 mL	00621019043035	Grey	No	
006	SD025	HDPE Soil Jar	200 mL	00621019042845	Grey	No	
006	SD025	HDPE Soil Jar	200 mL	00621019042830	Grey	No	
007	SD009	HDPE Soil Jar	200 mL	00621019042854	Grey	No	
007	SD009	HDPE Soil Jar	200 mL	00621019042880	Grey	No	
008	SD008	HDPE Soil Jar	200 mL	00621019042832	Grey	No	
008	SD008	HDPE Soil Jar	200 mL	00621019042872	Grey	No	
009	SD016	HDPE Soil Jar	200 mL	00621019042861	Grey	No	
009	SD016	HDPE Soil Jar	200 mL	00621019042903	Grey	No	
010	SD015	HDPE Soil Jar	200 mL	00621019042851	Grey	No	
010	SD015	HDPE Soil Jar	200 mL	00621019042839	Grey	No	
011	SD011	HDPE Soil Jar	200 mL	00621019042904	Grey	No	
011	SD011	HDPE Soil Jar	200 mL	00621019042842	Grey	No	
012	QC106	HDPE Soil Jar	200 mL	00621019042860	Grey	No	
012	QC106	HDPE Soil Jar	200 mL	00621019042878	Grey	No	
013	SD010	HDPE Soil Jar	200 mL	00621019042829	Grey	No	
013	SD010	HDPE Soil Jar	200 mL	00621019042954	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

014	SD005	HDPE Soil Jar	200 mL	00621019042877	Grey	No	
014	SD005	HDPE Soil Jar	200 mL	00621019042855	Grey	No	
015	SD012	HDPE Soil Jar	200 mL	00621019042841	Grey	No	
015	SD012	HDPE Soil Jar	200 mL	00621019042828	Grey	No	
016	SD013	HDPE Soil Jar	200 mL	00621019042834	Grey	No	
016	SD013	HDPE Soil Jar	200 mL	00621019042883	Grey	No	
017	SD014	HDPE Soil Jar	200 mL	00621019042871	Grey	No	
017	SD014	HDPE Soil Jar	200 mL	00621019042888	Grey	No	
018	SD007	HDPE Soil Jar	200 mL	00621019042892	Grey	No	
018	SD007	HDPE Soil Jar	200 mL	00621019042867	Grey	No	
019	SD006	HDPE Soil Jar	200 mL	00621019042949	Grey	No	
019	SD006	HDPE Soil Jar	200 mL	00621019042833	Grey	No	
020	SS001	HDPE Soil Jar	200 mL	00621019042909	Grey	No	
020	SS001	HDPE Soil Jar	200 mL	00621019042863	Grey	No	
021	SS002	HDPE Soil Jar	200 mL	00621019042917	Grey	No	
021	SS002	HDPE Soil Jar	200 mL	00621019042935	Grey	No	
022	SS003	HDPE Soil Jar	200 mL	00621019042969	Grey	No	
022	SS003	HDPE Soil Jar	200 mL	00621019042896	Grey	No	
022	SS003	Soil Glass Jar - Unpreserved	150 mL	00260321039270	Orange	No	
022	SS003	Soil Glass Jar - Unpreserved	150 mL	00260321039284	Orange	No	
023	SS004	HDPE Soil Jar	200 mL	00621019042879	Grey	No	
023	SS004	HDPE Soil Jar	200 mL	00621019042890	Grey	No	
024	SS005	HDPE Soil Jar	200 mL	00621019043807	Grey	No	
024	SS005	HDPE Soil Jar	200 mL	00621019043787	Grey	No	
025	SS006	HDPE Soil Jar	200 mL	00621019043758	Grey	No	
025	SS006	HDPE Soil Jar	200 mL	00621019043854	Grey	No	
026	SS007	HDPE Soil Jar	200 mL	00621019043815	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

026	SS007	HDPE Soil Jar	200 mL	00621019043772	Grey	No	
027	SS008	HDPE Soil Jar	200 mL	00621019043795	Grey	No	
027	SS008	HDPE Soil Jar	200 mL	00621019043747	Grey	No	
028	SS009	HDPE Soil Jar	200 mL	00621019043775	Grey	No	
028	SS009	HDPE Soil Jar	200 mL	00621019043801	Grey	No	
029	SS010	HDPE Soil Jar	200 mL	00621019043846	Grey	No	
029	SS010	HDPE Soil Jar	200 mL	00621019043803	Grey	No	
030	SS011	HDPE Soil Jar	200 mL	00621019043828	Grey	No	
030	SS011	HDPE Soil Jar	200 mL	00621019043818	Grey	No	
031	SS012	HDPE Soil Jar	200 mL	00621019043861	Grey	No	
031	SS012	HDPE Soil Jar	200 mL	00621019043853	Grey	No	
032	SS013	HDPE Soil Jar	200 mL	00621019043879	Grey	No	
032	SS013	HDPE Soil Jar	200 mL	00621019043876	Grey	No	
033	SS014	Soil Glass Jar - Unpreserved	150 mL	00260321039267	Orange	No	
033	SS014	Soil Glass Jar - Unpreserved	150 mL	00260321039268	Orange	No	
033	SS014	HDPE Soil Jar	200 mL	00621019042916	Grey	No	
033	SS014	HDPE Soil Jar	200 mL	00621019042831	Grey	No	
034	SS015	HDPE Soil Jar	200 mL	00621019043850	Grey	No	
034	SS015	HDPE Soil Jar	200 mL	00621019043776	Grey	No	
035	SS016	HDPE Soil Jar	200 mL	00621019043830	Grey	No	
035	SS016	HDPE Soil Jar	200 mL	00621019043738	Grey	No	
036	SS040	HDPE Soil Jar	200 mL	00621019043037	Grey	No	
036	SS040	HDPE Soil Jar	200 mL	00621019043045	Grey	No	
037	QC109	HDPE Soil Jar	200 mL	00621019043114	Grey	No	
037	QC109	HDPE Soil Jar	200 mL	00621019043041	Grey	No	
038	SS043	HDPE Soil Jar	200 mL	00621019043095	Grey	No	
038	SS043	HDPE Soil Jar	200 mL	00621019043058	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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:

039	SS041	HDPE Soil Jar	200 mL	00621019043077	Grey	No	
039	SS041	HDPE Soil Jar	200 mL	00621019043051	Grey	No	
040	SS042	HDPE Soil Jar	200 mL	00621019043090	Grey	No	
040	SS042	HDPE Soil Jar	200 mL	00621019043069	Grey	No	
041	SS048	HDPE Soil Jar	200 mL	00621019043088	Grey	No	
041	SS048	HDPE Soil Jar	200 mL	00621019043048	Grey	No	
042	SS050	HDPE Soil Jar	200 mL	00621019043106	Grey	No	
042	SS050	HDPE Soil Jar	200 mL	00621019043032	Grey	No	
043	SS049	HDPE Soil Jar	200 mL	00621019043070	Grey	No	
043	SS049	HDPE Soil Jar	200 mL	00621019043072	Grey	No	
044	SS051	HDPE Soil Jar	200 mL	00621019043094	Grey	No	
044	SS051	HDPE Soil Jar	200 mL	00621019043067	Grey	No	
045	SS052	HDPE Soil Jar	200 mL	00621019043052	Grey	No	
045	SS052	HDPE Soil Jar	200 mL	00621019043119	Grey	No	
046	SS053	HDPE Soil Jar	200 mL	00621019043086	Grey	No	
046	SS053	HDPE Soil Jar	200 mL	00621019043122	Grey	No	
047	SS054	HDPE Soil Jar	200 mL	00621019043060	Grey	No	
047	SS054	HDPE Soil Jar	200 mL	00621019043042	Grey	No	
048	SS055	HDPE Soil Jar	200 mL	00621019043079	Grey	No	
048	SS055	HDPE Soil Jar	200 mL	00621019043029	Grey	No	
049	SS056	HDPE Soil Jar	200 mL	00621019043116	Grey	No	
049	SS056	HDPE Soil Jar	200 mL	00621019043109	Grey	No	
050	SS057	HDPE Soil Jar	200 mL	00621019043102	Grey	No	
050	SS057	HDPE Soil Jar	200 mL	00621019043118	Grey	No	
051	QC110	HDPE Soil Jar	200 mL	00621019042846	Grey	No	
051	QC110	HDPE Soil Jar	200 mL	00621019042898	Grey	No	
052	SS058	HDPE Soil Jar	200 mL	00621019043112	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

052	SS058	HDPE Soil Jar	200 mL	00621019043111	Grey	No	
053	QC111	HDPE Soil Jar	200 mL	00621019042875	Grey	No	
053	QC111	HDPE Soil Jar	200 mL	00621019042843	Grey	No	
054	QC112	HDPE Soil Jar	200 mL	00621019042968	Grey	No	
054	QC112	HDPE Soil Jar	200 mL	00621019042827	Grey	No	
055	SS067	HDPE Soil Jar	200 mL	00621019042942	Grey	No	
055	SS067	HDPE Soil Jar	200 mL	00621019042837	Grey	No	
056	SS068	HDPE Soil Jar	200 mL	00621019042964	Grey	No	
056	SS068	HDPE Soil Jar	200 mL	00621019042921	Grey	No	
057	SS069	HDPE Soil Jar	200 mL	00621019042912	Grey	No	
057	SS069	HDPE Soil Jar	200 mL	00621019042922	Grey	No	
057	SS069	Soil Glass Jar - Unpreserved	150 mL	00260321039273	Orange	No	
057	SS069	Soil Glass Jar - Unpreserved	150 mL	00260321039277	Orange	No	
058	SS070	HDPE Soil Jar	200 mL	00621019043757	Grey	No	
058	SS070	HDPE Soil Jar	200 mL	00621019043802	Grey	No	
059	SS071	HDPE Soil Jar	200 mL	00621019043748	Grey	No	
059	SS071	HDPE Soil Jar	200 mL	00621019043805	Grey	No	
060	SS072	HDPE Soil Jar	200 mL	00621019043761	Grey	No	
060	SS072	HDPE Soil Jar	200 mL	00621019043753	Grey	No	
061	SS073	HDPE Soil Jar	200 mL	00621019043759	Grey	No	
061	SS073	HDPE Soil Jar	200 mL	00621019043792	Grey	No	
062	SS074	HDPE Soil Jar	200 mL	00621019043806	Grey	No	
062	SS074	HDPE Soil Jar	200 mL	00621019043755	Grey	No	
063	SS075	HDPE Soil Jar	200 mL	00621019043742	Grey	No	
063	SS075	HDPE Soil Jar	200 mL	00621019043794	Grey	No	
064	SS076	HDPE Soil Jar	200 mL	00621019043751	Grey	No	
064	SS076	HDPE Soil Jar	200 mL	00621019043749	Grey	No	

CHAIN OF CUSTODY

(ALS) COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

065	SS077	HDPE Soil Jar	200 mL	00621019043790	Grey	No	
065	SS077	HDPE Soil Jar	200 mL	00621019043777	Grey	No	
066	SS078	HDPE Soil Jar	200 mL	00621019043770	Grey	No	
066	SS078	HDPE Soil Jar	200 mL	00621019043798	Grey	No	
067	SS079	HDPE Soil Jar	200 mL	00621019043773	Grey	No	
067	SS079	HDPE Soil Jar	200 mL	00621019043731	Grey	No	
068	SS080	Soil Glass Jar - Unpreserved	150 mL	00260321039260	Orange	No	
068	SS080	Soil Glass Jar - Unpreserved	150 mL	00260321039274	Orange	No	
068	SS080	HDPE Soil Jar	200 mL	00621019043810	Grey	No	
068	SS080	HDPE Soil Jar	200 mL	00621019043735	Grey	No	
069	SS081	HDPE Soil Jar	200 mL	00621019043756	Grey	No	
069	SS081	HDPE Soil Jar	200 mL	00621019043765	Grey	No	
070	SS082	HDPE Soil Jar	200 mL	00621019043739	Grey	No	
070	SS082	HDPE Soil Jar	200 mL	00621019043785	Grey	No	
071	QC115	HDPE Soil Jar	200 mL	00621019043782	Grey	No	
071	QC115	HDPE Soil Jar	200 mL	00621019043763	Grey	No	
072	QC116	HDPE Soil Jar	200 mL	00621019043762	Grey	No	
072	QC116	HDPE Soil Jar	200 mL	00621019043769	Grey	No	
073	QC117	HDPE Soil Jar	200 mL	00621019042924	Grey	No	
073	QC117	HDPE Soil Jar	200 mL	00621019042951	Grey	No	
074	SS111	HDPE Soil Jar	200 mL	00621019042966	Grey	No	
074	SS111	HDPE Soil Jar	200 mL	00621019042876	Grey	No	
075	SS112	HDPE Soil Jar	200 mL	00621019043743	Grey	No	
075	SS112	HDPE Soil Jar	200 mL	00621019043730	Grey	No	
076	SS113	HDPE Soil Jar	200 mL	00621019043789	Grey	No	
076	SS113	HDPE Soil Jar	200 mL	00621019043778	Grey	No	
077	SS114	HDPE Soil Jar	200 mL	00621019043744	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard Info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

077	SS114	HDPE Soil Jar	200 mL	00621019043783	Grey	No	
077	SS114	Soil Glass Jar - Unpreserved	150 mL	00260321041400	Orange	No	
077	SS114	Soil Glass Jar - Unpreserved	150 mL	00260321041419	Orange	No	
078	SS062	HDPE Soil Jar	200 mL	00621019043121	Grey	No	
078	SS062	HDPE Soil Jar	200 mL	00621019043099	Grey	No	
079	SS059	HDPE Soil Jar	200 mL	00621019043076	Grey	No	
079	SS059	HDPE Soil Jar	200 mL	00621019043017	Grey	No	
080	SS060	HDPE Soil Jar	200 mL	00621019043028	Grey	No	
080	SS060	HDPE Soil Jar	200 mL	00621019043038	Grey	No	
081	SS061	HDPE Soil Jar	200 mL	00621019043120	Grey	No	
081	SS061	HDPE Soil Jar	200 mL	00621019043104	Grey	No	
082	SS066	HDPE Soil Jar	200 mL	00621019043089	Grey	No	
082	SS066	HDPE Soil Jar	200 mL	00621019043096	Grey	No	
083	SS063	HDPE Soil Jar	200 mL	00621019043075	Grey	No	
083	SS063	HDPE Soil Jar	200 mL	00621019043024	Grey	No	
084	SS064	HDPE Soil Jar	200 mL	00621019043061	Grey	No	
084	SS064	HDPE Soil Jar	200 mL	00621019043078	Grey	No	
085	SS065	HDPE Soil Jar	200 mL	00621019043103	Grey	No	
085	SS065	HDPE Soil Jar	200 mL	00621019043073	Grey	No	
086	SS084	HDPE Soil Jar	200 mL	00621019043123	Grey	No	
086	SS084	HDPE Soil Jar	200 mL	00621019043108	Grey	No	
087	SD Pond 2	HDPE Soil Jar	200 mL	00621019043039	Grey	No	
087	SD Pond 2	HDPE Soil Jar	200 mL	00621019042995	Grey	No	
088	SD Pond 1	HDPE Soil Jar	200 mL	00621019043063	Grey	No	
088	SD Pond 1	HDPE Soil Jar	200 mL	00621019043087	Grey	No	
089	SS083	HDPE Soil Jar	200 mL	00621019043020	Grey	No	
089	SS083	HDPE Soil Jar	200 mL	00621019043100	Grey	No	

CHAIN OF CUSTODY

ALS COC#: 26152 ALS Laboratory: EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

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:

090	SS085	HDPE Soil Jar	200 mL	00621019043011	Grey	No	
090	SS085	HDPE Soil Jar	200 mL	00621019042986	Grey	No	
091	SS086	HDPE Soil Jar	200 mL	00621019043013	Grey	No	
091	SS086	HDPE Soil Jar	200 mL	00621019043065	Grey	No	
092	SS099	HDPE Soil Jar	200 mL	00621019042943	Grey	No	
092	SS099	HDPE Soil Jar	200 mL	00621019042915	Grey	No	
093	SS101	HDPE Soil Jar	200 mL	00621019042950	Grey	No	
093	SS101	HDPE Soil Jar	200 mL	00621019042960	Grey	No	
094	SS102	HDPE Soil Jar	200 mL	00621019042920	Grey	No	
094	SS102	HDPE Soil Jar	200 mL	00621019042932	Grey	No	
095	SS100	HDPE Soil Jar	200 mL	00621019042938	Grey	No	
095	SS100	HDPE Soil Jar	200 mL	00621019042971	Grey	No	
096	SS115	HDPE Soil Jar	200 mL	00621019043837	Grey	No	
096	SS115	HDPE Soil Jar	200 mL	00621019043836	Grey	No	
097	SS116	HDPE Soil Jar	200 mL	00621019043863	Grey	No	
097	SS116	HDPE Soil Jar	200 mL	00621019043827	Grey	No	
098	SS117	HDPE Soil Jar	200 mL	00621019043839	Grey	No	
098	SS117	HDPE Soil Jar	200 mL	00621019043867	Grey	No	
099	SS118	HDPE Soil Jar	200 mL	00621019043825	Grey	No	
099	SS118	HDPE Soil Jar	200 mL	00621019043857	Grey	No	
099	SS118	Soil Glass Jar - Unpreserved	150 mL	00260321041405	Orange	No	
099	SS118	Soil Glass Jar - Unpreserved	150 mL	00260321041381	Orange	No	
100	SD021	HDPE Soil Jar	200 mL	00621019043781	Grey	No	
100	SD021	HDPE Soil Jar	200 mL	00621019043880	Grey	No	
101	SD022	HDPE Soil Jar	200 mL	00621019043750	Grey	No	
101	SD022	HDPE Soil Jar	200 mL	00621019043808	Grey	No	
102	SS120	HDPE Soil Jar	200 mL	00621019043110	Grey	No	

CHAIN OF CUSTODY

COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

102	SS120	HDPE Soil Jar	200 mL	00621019043053	Grey	No	
103	SS119	HDPE Soil Jar	200 mL	00621019043125	Grey	No	
103	SS119	HDPE Soil Jar	200 mL	00621019043057	Grey	No	
104	SS121	HDPE Soil Jar	200 mL	00621019043021	Grey	No	
104	SS121	HDPE Soil Jar	200 mL	00621019043107	Grey	No	
105	SS122	HDPE Soil Jar	200 mL	00621019042923	Grey	No	
105	SS122	HDPE Soil Jar	200 mL	00621019046089	Grey	No	
106	SS017	HDPE Soil Jar	200 mL	00621019042963	Grey	No	
106	SS017	HDPE Soil Jar	200 mL	00621019042858	Grey	No	
107	SS018	HDPE Soil Jar	200 mL	00621019042873	Grey	No	
107	SS018	HDPE Soil Jar	200 mL	00621019042893	Grey	No	
108	SS020	HDPE Soil Jar	200 mL	00621019042850	Grey	No	
108	SS020	HDPE Soil Jar	200 mL	00621019042885	Grey	No	
109	SS019	HDPE Soil Jar	200 mL	00621019042931	Grey	No	
109	SS019	HDPE Soil Jar	200 mL	00621019042957	Grey	No	
110	SS021	HDPE Soil Jar	200 mL	00621019042869	Grey	No	
110	SS021	HDPE Soil Jar	200 mL	00621019042936	Grey	No	
111	SS022	HDPE Soil Jar	200 mL	00621019042900	Grey	No	
111	SS022	HDPE Soil Jar	200 mL	00621019042926	Grey	No	
112	SS023	HDPE Soil Jar	200 mL	00621019042882	Grey	No	
112	SS023	HDPE Soil Jar	200 mL	00621019042865	Grey	No	
113	SS024	HDPE Soil Jar	200 mL	00621019042955	Grey	No	
113	SS024	HDPE Soil Jar	200 mL	00621019042857	Grey	No	
114	SS025	HDPE Soil Jar	200 mL	00621019042914	Grey	No	
114	SS025	HDPE Soil Jar	200 mL	00621019042847	Grey	No	
115	SS026	HDPE Soil Jar	200 mL	00621019042972	Grey	No	
115	SS026	HDPE Soil Jar	200 mL	00621019042953	Grey	No	

CHAIN OF CUSTODY

COC#: **26152** *ALS Laboratory:* EP Perth

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

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: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

116	SS027	HDPE Soil Jar	200 mL	00621019042870	Grey	No	
116	SS027	HDPE Soil Jar	200 mL	00621019042939	Grey	No	
117	QC125	HDPE Soil Jar	200 mL	00621019042884	Grey	No	
117	QC125	HDPE Soil Jar	200 mL	00621019042838	Grey	No	
118	SS028	Soil Glass Jar - Unpreserved	150 mL	00260321041413	Orange	No	
118	SS028	Soil Glass Jar - Unpreserved	150 mL	00260321041403	Orange	No	
118	SS028	HDPE Soil Jar	200 mL	00621019042959	Grey	No	
118	SS028	HDPE Soil Jar	200 mL	00621019042962	Grey	No	
119	SS029	HDPE Soil Jar	200 mL	00621019042897	Grey	No	
119	SS029	HDPE Soil Jar	200 mL	00621019042918	Grey	No	
120	SS030	HDPE Soil Jar	200 mL	00621019042859	Grey	No	
120	SS030	HDPE Soil Jar	200 mL	00621019042911	Grey	No	
121	SS032	HDPE Soil Jar	200 mL	00621019042958	Grey	No	
121	SS032	HDPE Soil Jar	200 mL	00621019042975	Grey	No	
122	SS031	HDPE Soil Jar	200 mL	00621019043784	Grey	No	
122	SS031	HDPE Soil Jar	200 mL	00621019043796	Grey	No	
123	SS033	HDPE Soil Jar	200 mL	00621019043859	Grey	No	
123	SS033	HDPE Soil Jar	200 mL	00621019043829	Grey	No	
124	QC126	HDPE Soil Jar	200 mL	00621019042899	Grey	No	
124	QC126	HDPE Soil Jar	200 mL	00621019042930	Grey	No	
125	QC127	HDPE Soil Jar	200 mL	00621019043764	Grey	No	
125	QC127	HDPE Soil Jar	200 mL	00621019043860	Grey	No	
126	SS034	HDPE Soil Jar	200 mL	00621019043800	Grey	No	
126	SS034	Soil Glass Jar - Unpreserved	150 mL	00260321041409	Orange	No	
126	SS034	Soil Glass Jar - Unpreserved	150 mL	00260321041404	Orange	No	
126	SS034	HDPE Soil Jar	200 mL	00621019043865	Grey	No	
127	SS035	HDPE Soil Jar	200 mL	00621019043097	Grey	No	

CHAIN OF CUSTODY

COC#: **26152** *ALS Laboratory:* EP Perth

CLIENT: CARBSD - CARDNO (WA) PTY LTD

PROJECT: Preliminary PFAS Assessment Mining Area C (MaC)

SITE: MG Preliminary PFAS Assessment Mining Area C (MaC)

ORDER NO: CW1173100

PROJECT MANAGER: Mark Harris CONTACT PH: SAMPLER MOBILE:

PRIMARY SAMPLER: Mark Harris QUOTE NO: EP/726/21 / EP2021CARBSD0020

EMAIL REPORTS TO: mark.harris2@cardno.com.au, mickayla.graham@cardno.com.au

EMAIL INVOICES TO: laura.beams@cardno.com.au

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

127	SS035	HDPE Soil Jar	200 mL	00621019042976	Grey	No	
128	SS036	HDPE Soil Jar	200 mL	00621019043098	Grey	No	
128	SS036	HDPE Soil Jar	200 mL	00621019042987	Grey	No	
129	SS037	HDPE Soil Jar	200 mL	00621019043062	Grey	No	
129	SS037	HDPE Soil Jar	200 mL	00621019043084	Grey	No	
129	SS037	Soil Glass Jar - Unpreserved	150 mL	00260321041402	Orange	No	
129	SS037	Soil Glass Jar - Unpreserved	150 mL	00260321041383	Orange	No	
130	SS038	HDPE Soil Jar	200 mL	00621019043056	Grey	No	
130	SS038	HDPE Soil Jar	200 mL	00621019043019	Grey	No	
131	SS039	HDPE Soil Jar	200 mL	00621019043031	Grey	No	
131	SS039	HDPE Soil Jar	200 mL	00621019043117	Grey	No	

Total Bottle Count: ALS: 280, Non ALS: 0

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EP2110231**

Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
E-mail	: mark.harris2@cardno.com.au	E-mail	: nick.courts@alsglobal.com
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Facsimile	: ----	Facsimile	: +61-8-9406 1399
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Page	: 1 of 5
Order number	: CW1173100	Quote number	: EP2021CARBSD0020 (EP/726/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Sampler	: Mark Harris		

Dates

Date Samples Received	: 01-Sep-2021 09:45	Issue Date	: 06-Sep-2021
Client Requested Due Date	: 20-Sep-2021	Scheduled Reporting Date	: **13-Sep-2021**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 20	Temperature	: 20.1 - Ice present
Receipt Detail	: Ice Melted	No. of samples received / analysed	: 65 / 65

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
- PSD conducted by ALS Newcastle, NATA accreditation no. 825, site no 1656.
- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (Samples.Perth@alsglobal.com)
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- **PSD analysis will be conducted by ALS Environmental, Newcastle, NATA accreditation no. 825, Site No. 1656.**
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Please note that your submission has been split into several Work Orders EP2110221 andEP2110231 to facilitate the regular delivery of data.**
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911.**
- **pH analysis should be conducted within 6 hours of sampling.**
- **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: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EN60-Dla-P Deionised Water Leach - Plastic Leaching Vessel	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29	SOIL - P-22 (WA/SYD) NEPM Screen for Soil Classification WA
EP2110231-001	22-Aug-2021 06:37	QC117	✓	✓	✓	✓	
EP2110231-002	22-Aug-2021 06:39	SS111	✓	✓	✓	✓	
EP2110231-003	22-Aug-2021 06:40	SS112	✓	✓	✓	✓	
EP2110231-004	22-Aug-2021 06:40	SS113	✓	✓	✓	✓	
EP2110231-005	22-Aug-2021 06:41	SS114	✓	✓	✓	✓	✓
EP2110231-006	22-Aug-2021 10:25	SS062	✓	✓	✓	✓	
EP2110231-007	22-Aug-2021 10:28	SS059	✓	✓	✓	✓	
EP2110231-008	22-Aug-2021 10:29	SS060	✓	✓	✓	✓	
EP2110231-009	22-Aug-2021 10:31	SS061	✓	✓	✓	✓	
EP2110231-010	22-Aug-2021 10:32	SS066	✓	✓	✓	✓	
EP2110231-011	22-Aug-2021 10:34	SS063	✓	✓	✓	✓	
EP2110231-012	22-Aug-2021 10:36	SS064	✓	✓	✓	✓	
EP2110231-013	22-Aug-2021 10:39	SS065	✓	✓	✓	✓	
EP2110231-014	22-Aug-2021 11:21	SS084	✓	✓	✓	✓	
EP2110231-015	22-Aug-2021 11:22	SD024	✓	✓	✓	✓	
EP2110231-016	22-Aug-2021 11:32	SD023	✓	✓	✓	✓	
EP2110231-017	22-Aug-2021 11:33	SS083	✓	✓	✓	✓	
EP2110231-018	22-Aug-2021 11:34	SS085	✓	✓	✓	✓	
EP2110231-019	22-Aug-2021 11:36	SS086	✓	✓	✓	✓	
EP2110231-020	22-Aug-2021 14:33	SS099	✓	✓	✓	✓	
EP2110231-021	22-Aug-2021 14:38	SS101	✓	✓	✓	✓	
EP2110231-022	22-Aug-2021 14:40	SS102	✓	✓	✓	✓	
EP2110231-023	22-Aug-2021 14:41	SS100	✓	✓	✓	✓	
EP2110231-024	22-Aug-2021 15:04	SS115	✓	✓	✓	✓	
EP2110231-025	22-Aug-2021 15:04	SS116	✓	✓	✓	✓	
EP2110231-026	22-Aug-2021 15:05	SS117	✓	✓	✓	✓	
EP2110231-027	22-Aug-2021 15:06	SS118	✓	✓	✓	✓	✓
EP2110231-028	22-Aug-2021 15:12	SD021	✓	✓	✓	✓	
EP2110231-029	22-Aug-2021 15:12	SD022	✓	✓	✓	✓	
EP2110231-030	23-Aug-2021 13:46	SS120	✓	✓	✓	✓	
EP2110231-031	23-Aug-2021 13:47	SS119	✓	✓	✓	✓	
EP2110231-032	23-Aug-2021 13:49	SS121	✓	✓	✓	✓	
EP2110231-033	23-Aug-2021 13:50	SS122	✓	✓	✓	✓	
EP2110231-034	23-Aug-2021 15:55	SS017	✓	✓	✓	✓	
EP2110231-035	23-Aug-2021 15:56	SS018	✓	✓	✓	✓	

			SOIL - EA055-103 Moisture Content	SOIL - EN60-Dia-P Deionised Water Leach - Plastic Leaching Vessel	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29	SOIL - P-22 (WA/SYD) NEPM Screen for Soil Classification WA
EP2110231-036	23-Aug-2021 15:57	SS020	✓	✓	✓	✓	
EP2110231-037	23-Aug-2021 15:57	SS019	✓	✓	✓	✓	
EP2110231-038	23-Aug-2021 13:58	SS021	✓	✓	✓	✓	
EP2110231-039	23-Aug-2021 15:59	SS022	✓	✓	✓	✓	
EP2110231-040	23-Aug-2021 16:04	SS023	✓	✓	✓	✓	
EP2110231-041	23-Aug-2021 16:00	SS024	✓	✓	✓	✓	
EP2110231-042	23-Aug-2021 16:01	SS025	✓	✓	✓	✓	
EP2110231-043	23-Aug-2021 16:01	SS026	✓	✓	✓	✓	
EP2110231-044	23-Aug-2021 16:02	SS027	✓	✓	✓	✓	
EP2110231-045	23-Aug-2021 16:03	QC125	✓	✓	✓	✓	
EP2110231-046	23-Aug-2021 16:04	SS028	✓	✓	✓	✓	✓
EP2110231-047	23-Aug-2021 16:06	SS029	✓	✓	✓	✓	
EP2110231-048	23-Aug-2021 16:06	SS030	✓	✓	✓	✓	
EP2110231-049	23-Aug-2021 16:07	SS032	✓	✓	✓	✓	
EP2110231-050	23-Aug-2021 16:07	SS031	✓	✓	✓	✓	
EP2110231-051	23-Aug-2021 16:08	SS033	✓	✓	✓	✓	
EP2110231-052	23-Aug-2021 16:09	QC126	✓	✓	✓	✓	
EP2110231-053	23-Aug-2021 16:10	QC127	✓	✓	✓	✓	
EP2110231-054	23-Aug-2021 16:10	SS034	✓	✓	✓	✓	✓
EP2110231-055	23-Aug-2021 16:11	SS035	✓	✓	✓	✓	
EP2110231-056	23-Aug-2021 16:12	SS036	✓	✓	✓	✓	
EP2110231-057	23-Aug-2021 16:12	SS037	✓	✓	✓	✓	✓
EP2110231-058	23-Aug-2021 16:13	SS038	✓	✓	✓	✓	
EP2110231-059	23-Aug-2021 16:14	SS039	✓	✓	✓	✓	

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29
EP2110231-060	19-Aug-2021 00:00	TBW738	✓
EP2110231-061	19-Aug-2021 00:00	TBW739	✓
EP2110231-062	19-Aug-2021 00:00	TBW742	✓
EP2110231-063	19-Aug-2021 00:00	TBW743	✓
EP2110231-064	19-Aug-2021 00:00	TBW744	✓

			WATER - EP231X-SUT PFAS - Super Ultra Trace Waters Long Suite (29
EP2110231-065	19-Aug-2021 00:00	TBW748	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA001: pH in soil using a 0.01M CaCl2 extract							
SS028	Soil Glass Jar - Unpreserved	30-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS034	Soil Glass Jar - Unpreserved	30-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS037	Soil Glass Jar - Unpreserved	30-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS114	Soil Glass Jar - Unpreserved	29-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS118	Soil Glass Jar - Unpreserved	29-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
EA002: pH (1:5)							
SS028	Soil Glass Jar - Unpreserved	30-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS034	Soil Glass Jar - Unpreserved	30-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS037	Soil Glass Jar - Unpreserved	30-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS114	Soil Glass Jar - Unpreserved	29-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
SS118	Soil Glass Jar - Unpreserved	29-Aug-2021	06-Sep-2021	01-Sep-2021	×	----	----
EA010: Electrical Conductivity (1:5)							
SS028	Soil Glass Jar - Unpreserved	30-Aug-2021	04-Oct-2021	01-Sep-2021	×	----	----
SS034	Soil Glass Jar - Unpreserved	30-Aug-2021	04-Oct-2021	01-Sep-2021	×	----	----
SS037	Soil Glass Jar - Unpreserved	30-Aug-2021	04-Oct-2021	01-Sep-2021	×	----	----
SS114	Soil Glass Jar - Unpreserved	29-Aug-2021	04-Oct-2021	01-Sep-2021	×	----	----
SS118	Soil Glass Jar - Unpreserved	29-Aug-2021	04-Oct-2021	01-Sep-2021	×	----	----

Requested Deliverables

ACCOUNTS PAYABLE (WA)

- A4 - AU Tax Invoice (INV)	Email	claire.armstrong@cardno.com.au

Laura Beames

- A4 - AU Tax Invoice (INV)	Email	laura.beames@cardno.com.au

Mark Harris

- *AU Certificate of Analysis - NATA (COA)	Email	mark.harris2@cardno.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	mark.harris2@cardno.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	mark.harris2@cardno.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	mark.harris2@cardno.com.au
- Attachment - Report (SUBCO)	Email	mark.harris2@cardno.com.au
- Chain of Custody (CoC) (COC)	Email	mark.harris2@cardno.com.au
- EDI Format - BHPIO (BHPIO)	Email	mark.harris2@cardno.com.au
- EDI Format - ESDAT (ESDAT)	Email	mark.harris2@cardno.com.au

Mickayla Graham

- *AU Certificate of Analysis - NATA (COA)	Email	Mickayla.graham@cardno.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Mickayla.graham@cardno.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Mickayla.graham@cardno.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Mickayla.graham@cardno.com.au
- Attachment - Report (SUBCO)	Email	Mickayla.graham@cardno.com.au
- Chain of Custody (CoC) (COC)	Email	Mickayla.graham@cardno.com.au
- EDI Format - BHPIO (BHPIO)	Email	Mickayla.graham@cardno.com.au
- EDI Format - ESDAT (ESDAT)	Email	Mickayla.graham@cardno.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP2110231**	Page	: 1 of 60
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021 09:45
Order number	: CW1173100	Date Analysis Commenced	: 06-Sep-2021
C-O-C number	: ----	Issue Date	: 20-Sep-2021 10:43
Sampler	: Mark Harris		
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Quote number	: EP/726/21		
No. of samples received	: 65		
No. of samples analysed	: 65		

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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Vincent Emerton-Bell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, 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.

- PSD conducted by ALS Newcastle, NATA accreditation no. 825, site no 1656.
- PFAS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EP231X-SUT: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).
- 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.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	QC117	SS111	SS112	SS113	SS114
				Sampling date / time	22-Aug-2021 06:37	22-Aug-2021 06:39	22-Aug-2021 06:40	22-Aug-2021 06:40	22-Aug-2021 06:41
					EP2110231-001	EP2110231-002	EP2110231-003	EP2110231-004	EP2110231-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0002**	**0.0012**	<0.0002	**0.0017**	**0.0009**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0008**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0009**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0005**	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	QC117	SS111	SS112	SS113	SS114
				Sampling date / time	22-Aug-2021 06:37	22-Aug-2021 06:39	22-Aug-2021 06:40	22-Aug-2021 06:40	22-Aug-2021 06:41
Compound	CAS Number	LOR	Unit		EP2110231-001	EP2110231-002	EP2110231-003	EP2110231-004	EP2110231-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0002**	**0.0012**	<0.0002	**0.0017**	**0.0009**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0002**	**0.0012**	<0.0002	**0.0025**	**0.0018**
^ Sum of PFAS	----	0.0002	µg/L		**0.0002**	**0.0012**	<0.0002	**0.0030**	**0.0018**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**103**	**101**	**109**	**101**	**100**
13C8-PFOA	----	0.0005	%		**88.9**	**92.9**	**101**	**94.3**	**93.9**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS062	SS059	SS060	SS061	SS066
				Sampling date / time	22-Aug-2021 10:25	22-Aug-2021 10:28	22-Aug-2021 10:29	22-Aug-2021 10:31	22-Aug-2021 10:32
					EP2110231-006	EP2110231-007	EP2110231-008	EP2110231-009	EP2110231-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	**0.0005**	<0.0002	<0.0002	**0.0046**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0058**	**0.0040**	**0.0579**	**0.0021**	**0.0021**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0130**	**0.0163**	**0.179**	**0.0082**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0022**	**0.0027**	**0.0742**	**0.0016**	**0.0030**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0096**	**0.0160**	**0.178**	**0.0064**	**0.0031**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0045**	**0.0043**	**1.51**	**0.0048**	**0.0086**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0074**	**0.0025**	**0.0301**	**0.0017**	**0.0301**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0082**	**0.0070**	**0.0090**	**0.0034**	**0.156**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	**0.0005**	**0.0015**	**0.0006**	**0.0197**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0010**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS062	SS059	SS060	SS061	SS066
				Sampling date / time	22-Aug-2021 10:25	22-Aug-2021 10:28	22-Aug-2021 10:29	22-Aug-2021 10:31	22-Aug-2021 10:32
Compound	CAS Number	LOR	Unit		EP2110231-006	EP2110231-007	EP2110231-008	EP2110231-009	EP2110231-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	**0.004**	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.085**	**0.034**	**22.3**	**0.062**	**0.091**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.248**	**0.064**	**0.276**	**0.125**	**4.44**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.001**	**0.002**	**0.006**	**0.002**	**0.002**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	**0.0005**	<0.0002	<0.0002	**0.0046**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.368**	**0.142**	**24.6**	**0.210**	**4.55**
^ Sum of PFAS	----	0.0002	µg/L		**0.385**	**0.154**	**24.6**	**0.218**	**4.76**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**104**	**94.8**	**95.8**	**99.9**	**102**
13C8-PFOA	----	0.0005	%		**96.0**	**96.5**	**90.9**	**92.4**	**94.8**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS063	SS064	SS065	SS084	SD024
				Sampling date / time	22-Aug-2021 10:34	22-Aug-2021 10:36	22-Aug-2021 10:39	22-Aug-2021 11:21	22-Aug-2021 11:22
					EP2110231-011	EP2110231-012	EP2110231-013	EP2110231-014	EP2110231-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0010**	**0.0011**	**0.0027**	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0108**	<0.0020	<0.0020	**0.0029**	**0.0022**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0344**	**0.0070**	**0.0014**	**0.0282**	**0.0131**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0039**	**0.0078**	**0.0027**	**0.0048**	**0.0050**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0186**	**0.0113**	**0.0031**	**0.0229**	**0.0365**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0252**	**0.0539**	**0.0775**	**0.0022**	**0.0015**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0622**	**0.0381**	**0.117**	**0.0025**	**0.0011**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0754**	**0.107**	**0.188**	**0.0036**	**0.0013**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		**0.0072**	**0.0230**	**0.0329**	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		**0.0008**	**0.0039**	**0.0051**	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS063	SS064	SS065	SS084	SD024
				Sampling date / time	22-Aug-2021 10:34	22-Aug-2021 10:36	22-Aug-2021 10:39	22-Aug-2021 11:21	22-Aug-2021 11:22
Compound	CAS Number	LOR	Unit		EP2110231-011	EP2110231-012	EP2110231-013	EP2110231-014	EP2110231-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**1.04**	**0.407**	**0.974**	**0.250**	**0.288**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**2.33**	**3.32**	**3.84**	**0.014**	**0.008**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.010**	**0.051**	**0.042**	**0.001**	**0.002**
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0010**	**0.0011**	**0.0027**	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**3.46**	**3.81**	**4.90**	**0.325**	**0.354**
^ Sum of PFAS	----	0.0002	µg/L		**3.62**	**4.03**	**5.29**	**0.332**	**0.359**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**116**	**110**	**105**	**112**	**112**
13C8-PFOA	----	0.0005	%		**97.2**	**77.4**	**90.2**	**100**	**100**

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SD023	SS083	SS085	SS086	SS099
				Sampling date / time	22-Aug-2021 11:32	22-Aug-2021 11:33	22-Aug-2021 11:34	22-Aug-2021 11:36	22-Aug-2021 14:33
Compound	CAS Number	LOR	Unit		EP2110231-016	EP2110231-017	EP2110231-018	EP2110231-019	EP2110231-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0133**	<0.0005	<0.0005	**0.0013**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	**0.0027**	<0.0002	<0.0002	**0.0013**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	**0.215**	**0.0133**	**0.0046**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**1.00**	**0.0909**	**0.0205**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0877**	**0.0090**	**0.0093**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0048**	**0.689**	**0.0464**	**0.0264**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0295**	**0.0045**	**0.0117**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0124**	**0.0013**	**0.0033**	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	**0.0157**	**0.0030**	**0.0144**	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	**0.0031**	<0.0005	**0.0009**	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SD023	SS083	SS085	SS086	SS099
				Sampling date / time	22-Aug-2021 11:32	22-Aug-2021 11:33	22-Aug-2021 11:34	22-Aug-2021 11:36	22-Aug-2021 14:33
Compound	CAS Number	LOR	Unit		EP2110231-016	EP2110231-017	EP2110231-018	EP2110231-019	EP2110231-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.043**	**0.358**	**0.166**	**0.010**	**0.003**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.002**	**0.248**	**0.027**	**0.026**	**0.003**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		**0.002**	**0.004**	<0.001	**0.001**	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	**0.0027**	<0.0002	<0.0002	**0.0013**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0498**	**2.64**	**0.357**	**0.108**	**0.0086**
^ Sum of PFAS	----	0.0002	µg/L		**0.0518**	**2.68**	**0.361**	**0.128**	**0.0086**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**99.9**	**111**	**119**	**114**	**104**
13C8-PFOA	----	0.0005	%		**93.7**	**88.9**	**99.2**	**101**	**97.8**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS101	SS102	SS100	SS115	SS116
				Sampling date / time	22-Aug-2021 14:38	22-Aug-2021 14:40	22-Aug-2021 14:41	22-Aug-2021 15:04	22-Aug-2021 15:04
					EP2110231-021	EP2110231-022	EP2110231-023	EP2110231-024	EP2110231-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0022**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0008**	**0.0017**	**0.0009**	**0.0032**	**0.0013**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.0064**	<0.0020	<0.0020	**0.0026**	**0.0052**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0216**	<0.0005	<0.0005	**0.0149**	**0.0047**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0074**	<0.0005	<0.0005	**0.0053**	**0.0010**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0114**	<0.0005	<0.0005	**0.0185**	**0.0085**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0224**	**0.0008**	**0.0009**	**0.0052**	**0.0022**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0088**	**0.0006**	<0.0005	**0.0071**	**0.0015**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0204**	**0.0008**	<0.0005	**0.0064**	**0.0056**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		**0.0010**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS101	SS102	SS100	SS115	SS116
				Sampling date / time	22-Aug-2021 14:38	22-Aug-2021 14:40	22-Aug-2021 14:41	22-Aug-2021 15:04	22-Aug-2021 15:04
Compound	CAS Number	LOR	Unit		EP2110231-021	EP2110231-022	EP2110231-023	EP2110231-024	EP2110231-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.006**	**0.015**	**0.016**	**0.166**	**0.045**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.005**	**0.006**	**0.003**	**0.026**	**0.022**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0008**	**0.0017**	**0.0009**	**0.0032**	**0.0013**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0832**	**0.0235**	**0.0208**	**0.242**	**0.0899**
^ Sum of PFAS	----	0.0002	µg/L		**0.113**	**0.0249**	**0.0208**	**0.255**	**0.0970**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**107**	**118**	**109**	**112**	**110**
13C8-PFOA	----	0.0005	%		**94.5**	**105**	**97.8**	**99.1**	**93.7**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS117	SS118	SD021	SD022	SS120
				Sampling date / time	22-Aug-2021 15:05	22-Aug-2021 15:06	22-Aug-2021 15:12	22-Aug-2021 15:12	23-Aug-2021 13:46
					EP2110231-026	EP2110231-027	EP2110231-028	EP2110231-029	EP2110231-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0006**	<0.0016	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	**0.0006**	<0.0016	**0.0009**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	**0.0040**	**0.0182**	**0.0113**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0037**	**0.0095**	**0.0358**	**0.0472**	**0.0006**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0018**	**0.0018**	**0.0483**	**0.0288**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0022**	**0.0070**	**0.280**	**0.257**	**0.0066**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0006**	**0.0009**	**0.0021**	**0.0021**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0017**	**0.0012**	**0.0019**	**0.0072**	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0016**	**0.0026**	**0.0034**	**0.0086**	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0016	**0.0016**	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	**0.0024**	**0.0006**	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0040	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.004	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.004	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS117	SS118	SD021	SD022	SS120
				Sampling date / time	22-Aug-2021 15:05	22-Aug-2021 15:06	22-Aug-2021 15:12	22-Aug-2021 15:12	23-Aug-2021 13:46
Compound	CAS Number	LOR	Unit		EP2110231-026	EP2110231-027	EP2110231-028	EP2110231-029	EP2110231-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.004	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.004	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.002	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.014**	**0.013**	**22.6**	**2.54**	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.003**	**0.012**	**0.145**	**0.101**	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	**0.109**	**0.007**	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	**0.0006**	<0.0016	**0.0009**	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0253**	**0.0494**	**23.1**	**2.99**	**0.0072**
^ Sum of PFAS	----	0.0002	µg/L		**0.0286**	**0.0532**	**23.2**	**3.01**	**0.0072**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**104**	**113**	**114**	**117**	**114**
13C8-PFOA	----	0.0005	%		**95.8**	**98.0**	**91.0**	**87.1**	**99.7**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS119	SS121	SS122	SS017	SS018
				Sampling date / time	23-Aug-2021 13:47	23-Aug-2021 13:49	23-Aug-2021 13:50	23-Aug-2021 15:55	23-Aug-2021 15:56
					EP2110231-031	EP2110231-032	EP2110231-033	EP2110231-034	EP2110231-035
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0093**	<0.0005	<0.0005	<0.0005	**0.0007**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0018**	**0.0003**	**0.0014**	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		**0.138**	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.286**	<0.0005	**0.0160**	<0.0005	**0.0029**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.146**	**0.0006**	**0.0021**	<0.0005	**0.0008**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.380**	<0.0005	**0.0109**	<0.0005	**0.0014**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0084**	<0.0005	**0.0016**	<0.0005	**0.0011**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0044**	<0.0005	**0.0016**	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		**0.0080**	**0.0010**	**0.0042**	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS119	SS121	SS122	SS017	SS018
				Sampling date / time	23-Aug-2021 13:47	23-Aug-2021 13:49	23-Aug-2021 13:50	23-Aug-2021 15:55	23-Aug-2021 15:56
Compound	CAS Number	LOR	Unit		EP2110231-031	EP2110231-032	EP2110231-033	EP2110231-034	EP2110231-035
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.020**	**0.007**	**0.013**	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.004**	<0.001	**0.002**	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0018**	**0.0003**	**0.0014**	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.994**	**0.0079**	**0.0470**	<0.0002	**0.0069**
^ Sum of PFAS	----	0.0002	µg/L		**1.00**	**0.0089**	**0.0528**	<0.0002	**0.0069**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**109**	**106**	**110**	**104**	**106**
13C8-PFOA	----	0.0005	%		**95.4**	**99.1**	**97.9**	**97.0**	**95.8**

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS020	SS019	SS021	SS022	SS023
				Sampling date / time	23-Aug-2021 15:57	23-Aug-2021 15:57	23-Aug-2021 13:58	23-Aug-2021 15:59	23-Aug-2021 16:04
Compound	CAS Number	LOR	Unit		EP2110231-036	EP2110231-037	EP2110231-038	EP2110231-039	EP2110231-040
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0003**	**0.0005**	<0.0002	**0.0021**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0008**	**0.0007**	**0.0012**	<0.0005	**0.0015**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	**0.0007**	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0006**	**0.0006**	**0.0006**	<0.0005	**0.0010**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0005**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS020	SS019	SS021	SS022	SS023
				Sampling date / time	23-Aug-2021 15:57	23-Aug-2021 15:57	23-Aug-2021 13:58	23-Aug-2021 15:59	23-Aug-2021 16:04
Compound	CAS Number	LOR	Unit		EP2110231-036	EP2110231-037	EP2110231-038	EP2110231-039	EP2110231-040
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0003**	**0.0005**	<0.0002	**0.0021**	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0017**	**0.0018**	**0.0025**	**0.0021**	**0.0030**
^ Sum of PFAS	----	0.0002	µg/L		**0.0017**	**0.0018**	**0.0025**	**0.0021**	**0.0030**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**103**	**104**	**112**	**103**	**105**
13C8-PFOA	----	0.0005	%		**95.8**	**98.2**	**98.9**	**95.8**	**99.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS024	SS025	SS026	SS027	QC125
				Sampling date / time	23-Aug-2021 16:00	23-Aug-2021 16:01	23-Aug-2021 16:01	23-Aug-2021 16:02	23-Aug-2021 16:03
					EP2110231-041	EP2110231-042	EP2110231-043	EP2110231-044	EP2110231-045
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	**0.0002**	**0.0002**	**0.0004**	**0.0002**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0008**	<0.0005	**0.0006**	<0.0005	**0.0006**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0005**	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS024	SS025	SS026	SS027	QC125
				Sampling date / time	23-Aug-2021 16:00	23-Aug-2021 16:01	23-Aug-2021 16:01	23-Aug-2021 16:02	23-Aug-2021 16:03
Compound	CAS Number	LOR	Unit		EP2110231-041	EP2110231-042	EP2110231-043	EP2110231-044	EP2110231-045
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	**0.0002**	**0.0002**	**0.0004**	**0.0002**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0008**	**0.0007**	**0.0008**	**0.0004**	**0.0008**
^ Sum of PFAS	----	0.0002	µg/L		**0.0008**	**0.0007**	**0.0008**	**0.0004**	**0.0008**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**109**	**106**	**103**	**106**	**110**
13C8-PFOA	----	0.0005	%		**101**	**98.0**	**98.4**	**98.2**	**101**

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS028	SS029	SS030	SS032	SS031
				Sampling date / time	23-Aug-2021 16:04	23-Aug-2021 16:06	23-Aug-2021 16:06	23-Aug-2021 16:07	23-Aug-2021 16:07
Compound	CAS Number	LOR	Unit		EP2110231-046	EP2110231-047	EP2110231-048	EP2110231-049	EP2110231-050
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0009**	<0.0005	<0.0005	**0.0007**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0011**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	**0.0026**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0006**	**0.0018**	**0.0006**	<0.0005	**0.0024**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0009**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0012**	**0.0012**	<0.0005	**0.0012**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0018**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS028	SS029	SS030	SS032	SS031
				Sampling date / time	23-Aug-2021 16:04	23-Aug-2021 16:06	23-Aug-2021 16:06	23-Aug-2021 16:07	23-Aug-2021 16:07
Compound	CAS Number	LOR	Unit		EP2110231-046	EP2110231-047	EP2110231-048	EP2110231-049	EP2110231-050
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	<0.0002	**0.0011**
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0006**	**0.0039**	**0.0018**	<0.0002	**0.0107**
^ Sum of PFAS	----	0.0002	µg/L		**0.0006**	**0.0039**	**0.0018**	<0.0002	**0.0107**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**110**	**105**	**108**	**115**	**111**
13C8-PFOA	----	0.0005	%		**100**	**94.0**	**98.6**	**104**	**98.7**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS033	QC126	QC127	SS034	SS035
				Sampling date / time	23-Aug-2021 16:08	23-Aug-2021 16:09	23-Aug-2021 16:10	23-Aug-2021 16:10	23-Aug-2021 16:11
					EP2110231-051	EP2110231-052	EP2110231-053	EP2110231-054	EP2110231-055
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0041**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0004**	**0.0002**	**0.0005**	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	**0.0266**	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0006**	**0.0020**	**0.0378**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0008**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	**0.0008**	**0.0112**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0005**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS033	QC126	QC127	SS034	SS035
				Sampling date / time	23-Aug-2021 16:08	23-Aug-2021 16:09	23-Aug-2021 16:10	23-Aug-2021 16:10	23-Aug-2021 16:11
Compound	CAS Number	LOR	Unit		EP2110231-051	EP2110231-052	EP2110231-053	EP2110231-054	EP2110231-055
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	**0.002**	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0004**	**0.0002**	**0.0005**	<0.0002	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0004**	**0.0008**	**0.0053**	**0.0810**	<0.0002
^ Sum of PFAS	----	0.0002	µg/L		**0.0004**	**0.0008**	**0.0053**	**0.0810**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**96.1**	**99.7**	**109**	**104**	**99.3**
13C8-PFOA	----	0.0005	%		**92.7**	**91.2**	**91.2**	**94.6**	**91.6**

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS036	SS037	SS038	SS039	----
				Sampling date / time	23-Aug-2021 16:12	23-Aug-2021 16:12	23-Aug-2021 16:13	23-Aug-2021 16:14	----
Compound	CAS Number	LOR	Unit		EP2110231-056	EP2110231-057	EP2110231-058	EP2110231-059	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0030**	<0.0005	<0.0005	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.0005**	<0.0005	<0.0005	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		**0.0007**	**0.0009**	**0.0011**	**0.0010**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	**0.0045**	<0.0020	<0.0020	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0014**	<0.0005	<0.0005	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0012**	<0.0005	<0.0005	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0027**	<0.0005	<0.0005	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0015**	**0.0012**	**0.0006**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	**0.0007**	<0.0005	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	**0.0008**	<0.0005	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----

Analytical Results

Sub-Matrix: DI WATER (Matrix: WATER)				Sample ID	SS036	SS037	SS038	SS039	----
				Sampling date / time	23-Aug-2021 16:12	23-Aug-2021 16:12	23-Aug-2021 16:13	23-Aug-2021 16:14	----
Compound	CAS Number	LOR	Unit		EP2110231-056	EP2110231-057	EP2110231-058	EP2110231-059	--------
					Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		**0.0007**	**0.0014**	**0.0011**	**0.0010**	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0007**	**0.0157**	**0.0023**	**0.0016**	----
^ Sum of PFAS	----	0.0002	µg/L		**0.0007**	**0.0157**	**0.0038**	**0.0016**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**103**	**105**	**101**	**110**	----
13C8-PFOA	----	0.0005	%		**92.1**	**90.2**	**96.8**	**91.5**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC117	SS111	SS112	SS113	SS114
			Sampling date / time	22-Aug-2021 06:37	22-Aug-2021 06:39	22-Aug-2021 06:40	22-Aug-2021 06:40	22-Aug-2021 06:41
Compound	CAS Number	LOR	Unit	EP2110231-001	EP2110231-002	EP2110231-003	EP2110231-004	EP2110231-005
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	----	----	----	6.2
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	6.3
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	2440
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	10.6	2.1	9.7	7.4	2.4
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	----	----	13
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	----	3.04
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	4.7
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	0.8
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	0.8
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	6.4
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	----	----	----	17.0
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	6.3	7.2	6.5	6.1	6.4
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	0.8
Total Organic Carbon	----	0.5	%	----	----	----	----	<0.5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC117	SS111	SS112	SS113	SS114
			Sampling date / time	22-Aug-2021 06:37	22-Aug-2021 06:39	22-Aug-2021 06:40	22-Aug-2021 06:40	22-Aug-2021 06:41
Compound	CAS Number	LOR	Unit	EP2110231-001	EP2110231-002	EP2110231-003	EP2110231-004	EP2110231-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC117	SS111	SS112	SS113	SS114
				Sampling date / time	22-Aug-2021 06:37	22-Aug-2021 06:39	22-Aug-2021 06:40	22-Aug-2021 06:40	22-Aug-2021 06:41
Compound	CAS Number	LOR	Unit		EP2110231-001	EP2110231-002	EP2110231-003	EP2110231-004	EP2110231-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**102**	**104**	**89.0**	**104**	**98.0**
13C8-PFOA	----	0.0002	%		**99.5**	**100**	**104**	**104**	**93.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS062	SS059	SS060	SS061	SS066
			Sampling date / time	22-Aug-2021 10:25	22-Aug-2021 10:28	22-Aug-2021 10:29	22-Aug-2021 10:31	22-Aug-2021 10:32
Compound	CAS Number	LOR	Unit	EP2110231-006	EP2110231-007	EP2110231-008	EP2110231-009	EP2110231-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**11.0**	**8.6**	**11.4**	**12.9**	**0.6**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**9.5**	**9.4**	**9.8**	**9.6**	**8.3**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	**0.001**	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0003**	**0.0006**	**0.0050**	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	**0.0004**	**0.0047**	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	**0.0017**	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	**0.0443**	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	**0.0010**	<0.0002	**0.0004**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0003**	**0.0004**	**0.0003**	<0.0002	**0.0040**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0016**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	**0.0003**	<0.0002	<0.0002	**0.0002**	**0.0023**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0007**
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	**0.0006**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS062	SS059	SS060	SS061	SS066
				Sampling date / time	22-Aug-2021 10:25	22-Aug-2021 10:28	22-Aug-2021 10:29	22-Aug-2021 10:31	22-Aug-2021 10:32
Compound	CAS Number	LOR	Unit		EP2110231-006	EP2110231-007	EP2110231-008	EP2110231-009	EP2110231-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0023**	**0.0010**	**0.486**	**0.0019**	**0.0016**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0111**	**0.0029**	**0.0110**	**0.0094**	**0.0771**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0108**	**0.0033**	**0.0047**	**0.0072**	**0.0340**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0251**	**0.0086**	**0.560**	**0.0187**	**0.122**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0137**	**0.0049**	**0.554**	**0.0113**	**0.0787**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**111**	**92.0**	**108**	**101**	**100**
13C8-PFOA	----	0.0002	%		**94.0**	**92.5**	**98.0**	**109**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS063	SS064	SS065	SS084	SD024
			Sampling date / time	22-Aug-2021 10:34	22-Aug-2021 10:36	22-Aug-2021 10:39	22-Aug-2021 11:21	22-Aug-2021 11:22
Compound	CAS Number	LOR	Unit	EP2110231-011	EP2110231-012	EP2110231-013	EP2110231-014	EP2110231-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**1.6**	**0.5**	**0.7**	**38.8**	**38.6**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**8.0**	**6.0**	**6.3**	**6.4**	**6.7**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0004**	<0.0002	<0.0002	**0.0006**	**0.0003**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0007**	**0.0014**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0003**	**0.0009**	**0.0041**	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0011**	**0.0010**	**0.0043**	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0021**	**0.0043**	**0.0052**	**0.0003**	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	**0.0005**	**0.0020**	**0.0016**	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	**0.0005**	**0.0025**	**0.0020**	**0.0004**	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	**0.0007**	**0.0006**	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	**0.0007**	**0.0006**	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS063	SS064	SS065	SS084	SD024
				Sampling date / time	22-Aug-2021 10:34	22-Aug-2021 10:36	22-Aug-2021 10:39	22-Aug-2021 11:21	22-Aug-2021 11:22
Compound	CAS Number	LOR	Unit		EP2110231-011	EP2110231-012	EP2110231-013	EP2110231-014	EP2110231-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0125**	**0.0092**	**0.0502**	**0.0028**	**0.0057**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.105**	**0.150**	**0.112**	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0145**	**0.0470**	**0.0363**	**0.0031**	**0.0017**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.137**	**0.218**	**0.217**	**0.0079**	**0.0091**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.118**	**0.160**	**0.166**	**0.0041**	**0.0074**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**89.5**	**99.0**	**82.5**	**102**	**100**
13C8-PFOA	----	0.0002	%		**104**	**99.5**	**104**	**115**	**88.5**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SD023	SS083	SS085	SS086	SS099
				Sampling date / time	22-Aug-2021 11:32	22-Aug-2021 11:33	22-Aug-2021 11:34	22-Aug-2021 11:36	22-Aug-2021 14:33
					EP2110231-016	EP2110231-017	EP2110231-018	EP2110231-019	EP2110231-020
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**22.9**	<0.1	**2.5**	**15.7**	**1.0**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)									
Final pH	----	0.1	pH Unit		**6.6**	**6.0**	**6.4**	**6.2**	**6.0**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	**0.008**	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	**0.0108**	**0.0009**	**0.0006**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	**0.0087**	**0.0011**	**0.0010**	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	**0.0007**	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	**0.0003**	<0.0002	**0.0002**	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	**0.0003**	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	**0.0008**	**0.0006**	**0.0010**	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	**0.0003**	**0.0002**	**0.0004**	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SD023	SS083	SS085	SS086	SS099
				Sampling date / time	22-Aug-2021 11:32	22-Aug-2021 11:33	22-Aug-2021 11:34	22-Aug-2021 11:36	22-Aug-2021 14:33
Compound	CAS Number	LOR	Unit		EP2110231-016	EP2110231-017	EP2110231-018	EP2110231-019	EP2110231-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0008**	**0.0070**	**0.0013**	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	**0.0128**	**0.0006**	**0.0009**	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	**0.0038**	**0.0005**	**0.0044**	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0008**	**0.0535**	**0.0052**	**0.0085**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0008**	**0.0483**	**0.0039**	**0.0027**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**98.0**	**93.0**	**90.0**	**88.0**	**91.0**
13C8-PFOA	----	0.0002	%		**116**	**95.0**	**85.0**	**97.5**	**95.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS101	SS102	SS100	SS115	SS116
			Sampling date / time	22-Aug-2021 14:38	22-Aug-2021 14:40	22-Aug-2021 14:41	22-Aug-2021 15:04	22-Aug-2021 15:04
Compound	CAS Number	LOR	Unit	EP2110231-021	EP2110231-022	EP2110231-023	EP2110231-024	EP2110231-025
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**4.4**	**1.4**	**0.2**	**20.1**	**0.1**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**5.3**	**5.5**	**5.1**	**6.7**	**5.9**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0007**	<0.0002	<0.0002	**0.0016**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0006**	<0.0002	<0.0002	**0.0020**	**0.0003**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0007**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0007**	<0.0002	<0.0002	**0.0005**	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0040**	<0.0002	<0.0002	**0.0020**	**0.0005**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	**0.0006**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	**0.0034**	<0.0002	<0.0002	**0.0002**	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	**0.0004**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	**0.0006**	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS101	SS102	SS100	SS115	SS116
				Sampling date / time	22-Aug-2021 14:38	22-Aug-2021 14:40	22-Aug-2021 14:41	22-Aug-2021 15:04	22-Aug-2021 15:04
Compound	CAS Number	LOR	Unit		EP2110231-021	EP2110231-022	EP2110231-023	EP2110231-024	EP2110231-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	**0.0059**	**0.0006**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	**0.0015**	**0.0010**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	**0.0014**	**0.0016**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0117**	<0.0002	<0.0002	**0.0154**	**0.0040**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0020**	<0.0002	<0.0002	**0.0113**	**0.0019**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**104**	**96.5**	**84.5**	**93.5**	**94.5**
13C8-PFOA	----	0.0002	%		**102**	**95.0**	**96.0**	**94.5**	**107**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS117	SS118	SD021	SD022	SS120
			Sampling date / time	22-Aug-2021 15:05	22-Aug-2021 15:06	22-Aug-2021 15:12	22-Aug-2021 15:12	23-Aug-2021 13:46
Compound	CAS Number	LOR	Unit	EP2110231-026	EP2110231-027	EP2110231-028	EP2110231-029	EP2110231-030
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	7.7	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	8.3	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	267	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	0.9	0.5	30.6	38.5	16.6
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	7	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	3.70	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	3.9	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	1.4	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	1.0	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	0.2	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	6.5	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	3.4	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	14.7	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	5.4	7.1	5.3	6.5	5.0
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	<0.5	----	----	----
Total Organic Carbon	----	0.5	%	----	<0.5	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS117	SS118	SD021	SD022	SS120
				Sampling date / time	22-Aug-2021 15:05	22-Aug-2021 15:06	22-Aug-2021 15:12	22-Aug-2021 15:12	23-Aug-2021 13:46
Compound	CAS Number	LOR	Unit		EP2110231-026	EP2110231-027	EP2110231-028	EP2110231-029	EP2110231-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	**0.001**	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	**0.0022**	**0.0009**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	**0.0002**	**0.0164**	**0.0065**	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	**0.0014**	**0.0005**	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	**0.0004**	**0.0006**	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	**0.0014**	**0.0009**	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS117	SS118	SD021	SD022	SS120
				Sampling date / time	22-Aug-2021 15:05	22-Aug-2021 15:06	22-Aug-2021 15:12	22-Aug-2021 15:12	23-Aug-2021 13:46
Compound	CAS Number	LOR	Unit		EP2110231-026	EP2110231-027	EP2110231-028	EP2110231-029	EP2110231-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	**0.0578**	**0.0622**	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	**0.0062**	**0.0045**	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	**0.0177**	**0.0091**	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	**0.0002**	**0.104**	**0.0859**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	**0.0002**	**0.0850**	**0.0746**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**79.5**	**88.0**	**95.5**	**92.5**	**89.5**
13C8-PFOA	----	0.0002	%		**101**	**92.5**	**98.0**	**95.0**	**91.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS119	SS121	SS122	SS017	SS018
			Sampling date / time	23-Aug-2021 13:47	23-Aug-2021 13:49	23-Aug-2021 13:50	23-Aug-2021 15:55	23-Aug-2021 15:56
Compound	CAS Number	LOR	Unit	EP2110231-031	EP2110231-032	EP2110231-033	EP2110231-034	EP2110231-035
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**7.5**	<0.1	**0.3**	**12.6**	**7.3**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**6.0**	**6.0**	**7.1**	**7.5**	**7.7**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	**0.003**	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0014**	<0.0002	**0.0003**	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0018**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0029**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	**0.0006**	<0.0002	**0.0003**	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS119	SS121	SS122	SS017	SS018
				Sampling date / time	23-Aug-2021 13:47	23-Aug-2021 13:49	23-Aug-2021 13:50	23-Aug-2021 15:55	23-Aug-2021 15:56
Compound	CAS Number	LOR	Unit		EP2110231-031	EP2110231-032	EP2110231-033	EP2110231-034	EP2110231-035
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		**0.0005**	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0104**	<0.0002	**0.0006**	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0093**	<0.0002	**0.0003**	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**93.5**	**93.5**	**80.0**	**92.0**	**102**
13C8-PFOA	----	0.0002	%		**92.5**	**98.0**	**88.0**	**91.0**	**90.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS020	SS019	SS021	SS022	SS023
			Sampling date / time	23-Aug-2021 15:57	23-Aug-2021 15:57	23-Aug-2021 13:58	23-Aug-2021 15:59	23-Aug-2021 16:04
Compound	CAS Number	LOR	Unit	EP2110231-036	EP2110231-037	EP2110231-038	EP2110231-039	EP2110231-040
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**12.7**	**10.0**	**11.5**	**0.2**	**9.5**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**6.5**	**6.8**	**6.8**	**5.8**	**7.5**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS020	SS019	SS021	SS022	SS023
				Sampling date / time	23-Aug-2021 15:57	23-Aug-2021 15:57	23-Aug-2021 13:58	23-Aug-2021 15:59	23-Aug-2021 16:04
Compound	CAS Number	LOR	Unit		EP2110231-036	EP2110231-037	EP2110231-038	EP2110231-039	EP2110231-040
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**89.5**	**87.5**	**101**	**88.0**	**99.5**
13C8-PFOA	----	0.0002	%		**94.0**	**93.0**	**97.5**	**93.5**	**99.5**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Sample ID	SS024	SS025	SS026	SS027	QC125
				Sampling date / time	23-Aug-2021 16:00	23-Aug-2021 16:01	23-Aug-2021 16:01	23-Aug-2021 16:02	23-Aug-2021 16:03
					EP2110231-041	EP2110231-042	EP2110231-043	EP2110231-044	EP2110231-045
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**12.1**	**9.9**	**15.5**	**12.0**	**13.0**
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)									
Final pH	----	0.1	pH Unit		**7.6**	**7.0**	**6.0**	**6.5**	**6.7**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS024	SS025	SS026	SS027	QC125
				Sampling date / time	23-Aug-2021 16:00	23-Aug-2021 16:01	23-Aug-2021 16:01	23-Aug-2021 16:02	23-Aug-2021 16:03
Compound	CAS Number	LOR	Unit		EP2110231-041	EP2110231-042	EP2110231-043	EP2110231-044	EP2110231-045
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**104**	**94.5**	**102**	**98.5**	**91.0**
13C8-PFOA	----	0.0002	%		**96.0**	**97.0**	**94.0**	**96.0**	**94.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS028	SS029	SS030	SS032	SS031
			Sampling date / time	23-Aug-2021 16:04	23-Aug-2021 16:06	23-Aug-2021 16:06	23-Aug-2021 16:07	23-Aug-2021 16:07
Compound	CAS Number	LOR	Unit	EP2110231-046	EP2110231-047	EP2110231-048	EP2110231-049	EP2110231-050
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	7.5	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	8.8	----	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	65	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	13.6	8.9	12.0	12.7	9.8
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	15	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	3.07	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	4.9	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	3.2	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	0.9	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	0.6	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	9.6	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%	6.8	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	15.0	----	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	6.8	7.3	6.0	6.7	7.4
EP004: Organic Matter								
Organic Matter	----	0.5	%	<0.5	----	----	----	----
Total Organic Carbon	----	0.5	%	<0.5	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS028	SS029	SS030	SS032	SS031
			Sampling date / time	23-Aug-2021 16:04	23-Aug-2021 16:06	23-Aug-2021 16:06	23-Aug-2021 16:07	23-Aug-2021 16:07
Compound	CAS Number	LOR	Unit	EP2110231-046	EP2110231-047	EP2110231-048	EP2110231-049	EP2110231-050
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS028	SS029	SS030	SS032	SS031
				Sampling date / time	23-Aug-2021 16:04	23-Aug-2021 16:06	23-Aug-2021 16:06	23-Aug-2021 16:07	23-Aug-2021 16:07
Compound	CAS Number	LOR	Unit		EP2110231-046	EP2110231-047	EP2110231-048	EP2110231-049	EP2110231-050
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**87.5**	**111**	**95.5**	**110**	**106**
13C8-PFOA	----	0.0002	%		**97.0**	**96.5**	**98.5**	**104**	**100**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS033	QC126	QC127	SS034	SS035
			Sampling date / time	23-Aug-2021 16:08	23-Aug-2021 16:09	23-Aug-2021 16:10	23-Aug-2021 16:10	23-Aug-2021 16:11
Compound	CAS Number	LOR	Unit	EP2110231-051	EP2110231-052	EP2110231-053	EP2110231-054	EP2110231-055
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	----	----	8.9	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	9.4	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	3170	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	14.2	14.3	8.9	2.6	11.0
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	----	7	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	3.29	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	11.2	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	3.6	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	0.8	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	0.6	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	16.2	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	----	----	15.5	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	7.7	7.5	8.4	9.4	8.2
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	1.2	----
Total Organic Carbon	----	0.5	%	----	----	----	0.7	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS033	QC126	QC127	SS034	SS035
			Sampling date / time	23-Aug-2021 16:08	23-Aug-2021 16:09	23-Aug-2021 16:10	23-Aug-2021 16:10	23-Aug-2021 16:11
Compound	CAS Number	LOR	Unit	EP2110231-051	EP2110231-052	EP2110231-053	EP2110231-054	EP2110231-055
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0008**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS033	QC126	QC127	SS034	SS035
				Sampling date / time	23-Aug-2021 16:08	23-Aug-2021 16:09	23-Aug-2021 16:10	23-Aug-2021 16:10	23-Aug-2021 16:11
Compound	CAS Number	LOR	Unit		EP2110231-051	EP2110231-052	EP2110231-053	EP2110231-054	EP2110231-055
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0012**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0012**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**102**	**108**	**100**	**88.5**	**101**
13C8-PFOA	----	0.0002	%		**100**	**102**	**96.0**	**81.0**	**108**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS036	SS037	SS038	SS039	----
			Sampling date / time	23-Aug-2021 16:12	23-Aug-2021 16:12	23-Aug-2021 16:13	23-Aug-2021 16:14	----
Compound	CAS Number	LOR	Unit	EP2110231-056	EP2110231-057	EP2110231-058	EP2110231-059	--------
				Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract								
ø pH (CaCl2)	----	0.1	pH Unit	----	6.6	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	7.1	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	577	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	0.3	1.5	0.8	0.8	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	15	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	3.06	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	3.6	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	1.0	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	0.9	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	0.3	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	5.9	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	----	18.6	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	8.1	7.2	8.2	7.7	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	<0.5	----	----	----
Total Organic Carbon	----	0.5	%	----	<0.5	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS036	SS037	SS038	SS039	----
				Sampling date / time	23-Aug-2021 16:12	23-Aug-2021 16:12	23-Aug-2021 16:13	23-Aug-2021 16:14	----
Compound	CAS Number	LOR	Unit		EP2110231-056	EP2110231-057	EP2110231-058	EP2110231-059	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS036	SS037	SS038	SS039	----
				Sampling date / time	23-Aug-2021 16:12	23-Aug-2021 16:12	23-Aug-2021 16:13	23-Aug-2021 16:14	----
Compound	CAS Number	LOR	Unit		EP2110231-056	EP2110231-057	EP2110231-058	EP2110231-059	--------
					Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**101**	**119**	**114**	**114**	----
13C8-PFOA	----	0.0002	%		**97.0**	**101**	**101**	**108**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TBW738	TBW739	TBW742	TBW743	TBW744
				Sampling date / time	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		EP2110231-060	EP2110231-061	EP2110231-062	EP2110231-063	EP2110231-064
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	**0.0036**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	**0.0010**	**0.0032**	**0.0006**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0011**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0019**	**0.0017**	**0.0026**	**0.0096**	**0.0020**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0014**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0013**	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0008**	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TBW738	TBW739	TBW742	TBW743	TBW744
				Sampling date / time	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00	19-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		EP2110231-060	EP2110231-061	EP2110231-062	EP2110231-063	EP2110231-064
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.029**	**0.029**	**0.044**	**0.088**	**0.038**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	<0.0002	<0.0002	**0.0036**	<0.0002
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0309**	**0.0307**	**0.0476**	**0.107**	**0.0406**
^ Sum of PFAS	----	0.0002	µg/L		**0.0309**	**0.0307**	**0.0476**	**0.109**	**0.0406**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**93.7**	**96.5**	**89.2**	**100**	**88.6**
13C8-PFOA	----	0.0005	%		**86.4**	**81.0**	**87.6**	**85.3**	**88.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TBW748	----	----	----	----
				Sampling date / time	19-Aug-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2110231-065	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.0020	µg/L		<0.0020	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0006**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0019**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TBW748	----	----	----	----
				Sampling date / time	19-Aug-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EP2110231-065	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.032**	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	----	----	----	----
EP231P: PFAS Sums									
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	µg/L		<0.0002	----	----	----	----
^ Sum of PFAS (WA DER List)	----	0.0002	µg/L		**0.0345**	----	----	----	----
^ Sum of PFAS	----	0.0002	µg/L		**0.0345**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**95.0**	----	----	----	----
13C8-PFOA	----	0.0005	%		**92.1**	----	----	----	----

Surrogate Control Limits

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

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

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

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA150: Soil Classification based on Particle Size

(SOIL) EA152: Soil Particle Density

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP231C: Perfluoroalkyl Sulfonamides

(WATER) EP231A: Perfluoroalkyl Sulfonic Acids

(WATER) EP231B: Perfluoroalkyl Carboxylic Acids

(WATER) EP231P: PFAS Sums

(WATER) EP231S: PFAS Surrogate

(SOIL) EP231B: Perfluoroalkyl Carboxylic Acids

(SOIL) EP231D: (n:2) Fluorotelomer Sulfonic Acids

(SOIL) EP231C: Perfluoroalkyl Sulfonamides

(SOIL) EP231A: Perfluoroalkyl Sulfonic Acids

(SOIL) EP231P: PFAS Sums

(SOIL) EP231S: PFAS Surrogate

(SOIL) EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)

(WATER) EP231D: (n:2) Fluorotelomer Sulfonic Acids

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology). Only applies to samples EP2110231 (001, 002, 003, 004, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, 021, 022, 023, 024, 025, 026, 028, 029, 030, 031, 032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 047, 048, 049, 050, 051, 052, 053, 055, 056, 058, 059).

(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

QUALITY CONTROL REPORT

Work Order	: **EP2110231**	Page	: 1 of 26
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Contact	: Nick Courts
Address	: 11 HARVEST TERRACE PO BOX 155 WEST PERTH WA, AUSTRALIA 6006	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 9273 3870	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021
Order number	: CW1173100	Date Analysis Commenced	: 06-Sep-2021
C-O-C number	: ----	Issue Date	: 20-Sep-2021
Sampler	: Mark Harris		
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)		
Quote number	: EP/726/21		
No. of samples received	: 65		
No. of samples analysed	: 65		

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

This report supersedes any previous report(s) with this reference. Results 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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Vincent Emerton-Bell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3893771)									
EP2110221-022	Anonymous	EG005T: Iron	7439-89-6	50	mg/kg	17.1 %	164000	4.3	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 3882657)									
EP2110221-022	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.5	7.6	1.3	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 3882645)									
EP2110221-022	Anonymous	EA002: pH Value	----	0.1	pH Unit	8.0	8.1	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 3882646)									
EP2110221-022	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	683	666	2.5	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3885283)									
EP2110231-046	SS028	EA055: Moisture Content	----	0.1	%	13.6	13.0	4.9	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3889948)									
EP2110221-022	Anonymous	EA055: Moisture Content	----	0.1	%	2.1	2.1	0.0	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894078)									
EP2110067-003	Anonymous	EA055: Moisture Content	----	0.1	%	22.4	20.0	11.5	0% - 20%
EP2110231-004	SS113	EA055: Moisture Content	----	0.1	%	7.4	7.6	2.5	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894079)									
EP2110231-013	SS065	EA055: Moisture Content	----	0.1	%	0.7	0.2	99.8	No Limit
EP2110231-025	SS116	EA055: Moisture Content	----	0.1	%	0.1	0.2	66.5	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894080)									
EP2110231-035	SS018	EA055: Moisture Content	----	0.1	%	7.3	7.1	3.5	0% - 20%
EP2110231-047	SS029	EA055: Moisture Content	----	0.1	%	8.9	8.6	3.8	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3894081)									
EP2110231-058	SS038	EA055: Moisture Content	----	0.1	%	0.8	1.0	22.3	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED007: Exchangeable Cations (QC Lot: 3887454)									
EP2110221-033	Anonymous	ED007: Exchangeable Sodium Percent	----	0.1	%	0.4	0.4	0.0	No Limit
		ED007: Exchangeable Calcium	----	0.1	meq/100g	16.2	16.8	3.5	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	0.6	0.6	0.0	No Limit
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.4	0.4	0.0	No Limit
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.0	No Limit
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	17.3	17.9	3.5	0% - 20%
ED008: Exchangeable Cations (QC Lot: 3887408)									
EP2110221-022	Anonymous	ED008: Exchangeable Calcium	----	0.1	meq/100g	4.3	4.0	6.8	0% - 20%
		ED008: Exchangeable Magnesium	----	0.1	meq/100g	0.7	0.8	0.0	No Limit
		ED008: Exchangeable Potassium	----	0.1	meq/100g	0.3	0.4	0.0	No Limit
		ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.0	No Limit
		ED008: Cation Exchange Capacity	----	0.1	meq/100g	5.5	5.2	5.0	0% - 20%
EP004: Organic Matter (QC Lot: 3891203)									
EP2110221-022	Anonymous	EP004: Organic Matter	----	0.5	%	0.6	0.5	0.0	No Limit
		EP004: Total Organic Carbon	----	0.5	%	<0.5	<0.5	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3890853)									
EP2110221-061	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110221-071	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3891824)									
EP2110231-009	SS061	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110231-019	SS086	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3891824) - continued									
EP2110231-019	SS086	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3891828)									
EP2110231-031	SS119	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110231-039	SS022	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3892680)									
EP2110231-049	SS032	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2110231-059	SS039	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890853)									
EP2110221-061	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0011	0.0012	10.8	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0006	0.0007	22.2	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0005	0.0007	21.7	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3890853) - continued									
EP2110221-071	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0014	0.0015	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0063	0.0066	4.2	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0050	0.0046	8.5	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0021	0.0018	11.3	0% - 50%
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0011	0.0009	19.6	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	0.0007	0.0005	28.8	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	0.002	0.002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3891824)									
EP2110231-009	SS061	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP2110231-019	SS086	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0006	0.0007	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0010	0.0010	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0010	0.0010	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3891828)									
EP2110231-031	SS119	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0014	0.0017	16.9	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0018	0.0021	18.5	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0029	0.0031	5.2	0% - 50%
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0002	0.0003	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3891828) - continued									
EP2110231-031	SS119	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0006	0.0007	15.9	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	0.003	0.003	0.0	No Limit
EP2110231-039	SS022	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3892680)									
EP2110231-049	SS032	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP2110231-059	SS039	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3890853)									
EP2110221-061	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110221-071	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3891824)									
EP2110231-009	SS061	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110231-019	SS086	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3891824) - continued									
EP2110231-019	SS086	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3891828)									
EP2110231-031	SS119	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110231-039	SS022	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3892680)									
EP2110231-049	SS032	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3892680) - continued									
EP2110231-049	SS032	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110231-059	SS039	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3890853)									
EP2110221-061	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.219	0.251	13.8	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0365	0.0434	17.1	0% - 20%
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0178	0.0206	14.7	0% - 20%
EP2110221-071	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	1.22	1.11	10.1	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.125	0.104	19.0	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3890853) - continued									
EP2110221-071	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0540	0.0456	16.7	0% - 20%
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3891824)									
EP2110231-009	SS061	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0019	0.0016	17.3	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0094	0.0094	0.0	0% - 50%
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0072	0.0064	12.6	0% - 50%
EP2110231-019	SS086	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0009	0.0013	39.8	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0044	0.0045	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3891828)									
EP2110231-031	SS119	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0005	<0.0005	0.0	No Limit
EP2110231-039	SS022	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3892680)									
EP2110231-049	SS032	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3892680) - continued									
EP2110231-049	SS032	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2110231-059	SS039	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3893771)								
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	78.5	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 3882657)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	99.5	98.8	101
				----	7 pH Unit	100	99.2	101
EA002: pH 1:5 (Soils) (QCLot: 3882645)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	100	70.0	130
				----	7 pH Unit	100	70.0	130
EA010: Conductivity (1:5) (QCLot: 3882646)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	100	93.6	106
ED007: Exchangeable Cations (QCLot: 3887454)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	21.6 meq/100g	97.6	82.9	117
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.76 meq/100g	94.1	78.4	119
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	1 meq/100g	107	87.9	129
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.9 meq/100g	106	92.9	132
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	25.3 meq/100g	97.9	84.7	117
ED007: Exchangeable Sodium Percent	----	0.1	%	<0.1	----	----	----	----
ED008: Exchangeable Cations (QCLot: 3887408)								
ED008: Exchangeable Calcium	----	0.1	meq/100g	<0.1	22.1 meq/100g	94.9	78.7	111
ED008: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.56 meq/100g	88.9	77.6	111
ED008: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.91 meq/100g	101	86.9	116
ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.38 meq/100g	107	72.3	129
ED008: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	24.95 meq/100g	94.9	79.9	110
EP004: Organic Matter (QCLot: 3891203)								
EP004: Organic Matter	----	0.5	%	<0.5	2.3 %	101	70.0	120
				<0.5	85 %	87.4	70.0	120
EP004: Total Organic Carbon	----	0.5	%	<0.5	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890853)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	59.0	134

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3891824)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.6	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3891828)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3892680)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890853)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	73.4	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.1	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3891824)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	86.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	133

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3891824) - continued								
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.2	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3891828)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	79.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.3	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3892680)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	81.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.0	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890853)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.8	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.3	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.0	65.1	134

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890853) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.0	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3891824)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	114	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.3	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.9	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.4	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3891828)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.9	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.5	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.5	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.7	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3892680)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.5	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.8	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.4	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.6	63.0	144

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3892680) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890853)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.2	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	84.8	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.2	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3891824)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	101	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	85.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	103	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.2	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3891828)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.0	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.8	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.2	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3892680)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	105	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	106	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3891852)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	90.8	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	78.4	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	75.6	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	84.8	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	77.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3904271)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	81.6	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	96.8	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.8	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	81.2	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	86.8	65.0	140

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3904271) - continued								
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	70.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3906005)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	119	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	107	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	94.8	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	91.2	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	94.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3906006)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	80.8	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	100	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	101	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	106	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	81.2	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	101	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3908491)								
EP231X-SUT: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	82.8	72.0	130
EP231X-SUT: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	92.4	71.0	127
EP231X-SUT: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	80.4	68.0	131
EP231X-SUT: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	69.0	134
EP231X-SUT: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	µg/L	<0.0002	0.004 µg/L	83.2	65.0	140
EP231X-SUT: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	76.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3891852)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	79.5	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	94.4	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	83.6	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	93.2	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	76.0	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	82.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	90.2	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3904271)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	85.7	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	92.8	72.0	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: 3904271) - continued								
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	92.8	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	96.0	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	96.8	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	91.6	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	89.2	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	78.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	92.5	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3906005)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	80.2	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	115	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	116	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	94.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	108	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	101	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	110	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	116	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	98.4	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	92.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3906006)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	92.7	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	84.0	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	80.4	71.0	133
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	78.0	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	83.2	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	109	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	98.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	80.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3908491)								
EP231X-SUT: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.0020	0.02 µg/L	76.5	73.0	129
EP231X-SUT: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	72.0	129
EP231X-SUT: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	88.0	72.0	129
EP231X-SUT: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	82.8	72.0	130
EP231X-SUT: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	71.0	133

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3908491) - continued								
EP231X-SUT: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	69.0	130
EP231X-SUT: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	85.6	71.0	129
EP231X-SUT: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	87.6	69.0	133
EP231X-SUT: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	95.6	72.0	134
EP231X-SUT: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	76.0	65.0	144
EP231X-SUT: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	87.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3891852)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	76.8	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	90.1	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	83.4	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	87.8	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	75.0	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	78.8	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	84.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3904271)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	94.0	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	92.5	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	89.6	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	85.0	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	115	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	90.0	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	84.4	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3906005)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	120	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	100	68.0	141

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: 3906005) - continued								
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	77.9	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	97.6	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	90.1	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	70.4	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	72.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3906006)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	82.0	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	69.4	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	75.8	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	76.3	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	81.0	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	84.8	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	86.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3908491)								
EP231X-SUT: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	81.2	67.0	137
EP231X-SUT: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	83.8	68.0	141
EP231X-SUT: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	73.1	56.6	136
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	96.5	61.9	129
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	89.6	52.8	135
EP231X-SUT: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	81.6	65.0	136
EP231X-SUT: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	87.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3891852)								

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: 3891852) - continued								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	77.6	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	83.6	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	88.0	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	84.8	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3904271)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	76.8	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	124	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	126	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	75.6	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3906005)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	78.0	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	123	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	112	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	78.4	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3906006)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	82.4	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	88.4	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	99.6	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	86.8	60.9	136
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3908491)								
EP231X-SUT: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	74.8	63.0	143
EP231X-SUT: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	100	64.0	140
EP231X-SUT: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	120	67.0	138
EP231X-SUT: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	84.4	60.9	136
EP231P: PFAS Sums (QCLot: 3891852)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3904271)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3906005)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----

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: 3906005) - continued								
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3906006)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231P: PFAS Sums (QCLot: 3908491)								
EP231X-SUT: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS (WA DER List)	----	0.0002	µg/L	<0.0002	----	----	----	----
EP231X-SUT: Sum of PFAS	----	0.0002	µg/L	<0.0002	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3890853)							
EP2110221-061	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	114	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	91.2	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	114	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	78.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	92.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	114	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3891824)							
EP2110231-009	SS061	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	118	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	116	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	118	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	80.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	81.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	78.8	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3891828)							
EP2110231-031	SS119	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	96.4	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	82.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	78.8	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	83.6	70.0	132

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3891828) - continued							
EP2110231-031	SS119	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	76.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	78.4	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3892680)							
EP2110231-049	SS032	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	93.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	93.6	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	87.6	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	90.8	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	90.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	94.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3890853)							
EP2110221-061	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	97.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	76.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	79.6	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	116	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	118	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	106	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	119	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	111	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	115	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	113	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3891824)							
EP2110231-009	SS061	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	91.0	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	106	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	94.8	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	105	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	97.2	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	88.4	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.0	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	96.8	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	104	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	95.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	109	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3891828)							
EP2110231-031	SS119	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	79.8	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	84.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	103	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	96.4	71.0	131

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3891828) - continued							
EP2110231-031	SS119	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	94.0	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	93.6	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	83.2	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	87.6	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	72.0	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	93.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	76.1	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3892680)							
EP2110231-049	SS032	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	77.8	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	100	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	105	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	98.0	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	104	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	90.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	89.6	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	102	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	115	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	89.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	104	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3890853)							
EP2110221-061	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	99.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	110	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	84.0	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	77.7	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	83.0	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	75.2	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	82.4	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3891824)							
EP2110231-009	SS061	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	104	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	120	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	95.7	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	87.8	68.7	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3891824) - continued							
EP2110231-009	SS061	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	101	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	82.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	82.0	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3891828)							
EP2110231-031	SS119	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	81.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	89.3	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	75.6	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	96.3	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	75.5	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	83.2	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	82.4	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3892680)							
EP2110231-049	SS032	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	96.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	90.2	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	83.8	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	87.2	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	85.9	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	74.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	73.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3890853)							
EP2110221-061	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	110	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	# Not Determined	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	# Not Determined	65.0	137

Sub-Matrix: **SOIL**

				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: 3890853) - continued							
EP2110221-061	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	# Not Determined	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3891824)							
EP2110231-009	SS061	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	94.4	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	82.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	# Not Determined	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	# Not Determined	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3891828)							
EP2110231-031	SS119	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	75.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	92.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	90.8	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	74.4	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3892680)							
EP2110231-049	SS032	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	75.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	101	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	94.8	69.2	143

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2110231**	Page	: 1 of 22
Client	: **CARDNO (WA) PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: Mark Harris	Telephone	: +61-8-9406 1301
Project	: Preliminary PFAS Assessment Mining Area C (MaC)	Date Samples Received	: 01-Sep-2021
Site	: MG Preliminary PFAS Assessment Mining Area C (MaC)	Issue Date	: 20-Sep-2021
Sampler	: Mark Harris	No. of samples received	: 65
Order number	: CW1173100	No. of samples analysed	: 65

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

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110221--061	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.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110221--061	Anonymous	**8:2 Fluorotelomer sulfonic acid (8:2 FTS)**	39108-34-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110231--009	SS061	**8:2 Fluorotelomer sulfonic acid (8:2 FTS)**	39108-34-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110221--061	Anonymous	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EP2110231--009	SS061	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved							
SS114,	SS118	06-Sep-2021	29-Aug-2021	**8**	----	----	----
Soil Glass Jar - Unpreserved							
SS028, SS037	SS034,	06-Sep-2021	30-Aug-2021	**7**	----	----	----
EA002: pH 1:5 (Soils)							
Soil Glass Jar - Unpreserved							
SS114,	SS118	06-Sep-2021	29-Aug-2021	**8**	----	----	----
Soil Glass Jar - Unpreserved							
SS028, SS037	SS034,	06-Sep-2021	30-Aug-2021	**7**	----	----	----
EA010: Conductivity (1:5)							
Soil Glass Jar - Unpreserved							
SS114,	SS118	06-Sep-2021	29-Aug-2021	**8**	----	----	----
Soil Glass Jar - Unpreserved							
SS028, SS037	SS034,	06-Sep-2021	30-Aug-2021	**7**	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)							

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA055: Moisture Content (Dried @ 105-110°C) - Analysis Holding Time Compliance						
HDPE Soil Jar						
QC117, SS111, SS112, SS113, SS062, SS059, SS060, SS061, SS066, SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SD021, SD022	----	----	----	09-Sep-2021	05-Sep-2021	**4**
HDPE Soil Jar						
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS029, SS030, SS032, SS031, SS033, QC126, QC127, SS035, SS036, SS038, SS039	----	----	----	09-Sep-2021	06-Sep-2021	**3**
Soil Glass Jar - Unpreserved						
SS114, SS118	----	----	----	08-Sep-2021	05-Sep-2021	**3**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Matrix Spikes (MS)					
Total Metals by ICP-AES	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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	67	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	67	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) SS114, SS118	**22-Aug-2021**	**06-Sep-2021**	29-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
Soil Glass Jar - Unpreserved (EA001) SS028, SS034, SS037	**23-Aug-2021**	**06-Sep-2021**	30-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
EA002: pH 1:5 (Soils)							
Soil Glass Jar - Unpreserved (EA002) SS114, SS118	**22-Aug-2021**	**06-Sep-2021**	29-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
Soil Glass Jar - Unpreserved (EA002) SS028, SS034, SS037	**23-Aug-2021**	**06-Sep-2021**	30-Aug-2021	×	**06-Sep-2021**	06-Sep-2021	✓
EA010: Conductivity (1:5)							
Soil Glass Jar - Unpreserved (EA010) SS114, SS118	**22-Aug-2021**	**06-Sep-2021**	29-Aug-2021	×	**06-Sep-2021**	04-Oct-2021	✓
Soil Glass Jar - Unpreserved (EA010) SS028, SS034, SS037	**23-Aug-2021**	**06-Sep-2021**	30-Aug-2021	×	**06-Sep-2021**	04-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
QC117, SS111, SS112, SS113, SS062, SS059, SS060, SS061, SS066, SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SD021, SD022	**22-Aug-2021**	**----**	----	----	**09-Sep-2021**	05-Sep-2021	×
HDPE Soil Jar (EA055)							
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS029, SS030, SS032, SS031, SS033, QC126, QC127, SS035, SS036, SS038, SS039	**23-Aug-2021**	**----**	----	----	**09-Sep-2021**	06-Sep-2021	×
Soil Glass Jar - Unpreserved (EA055)							
SS114, SS118	**22-Aug-2021**	**----**	----	----	**08-Sep-2021**	05-Sep-2021	×
Soil Glass Jar - Unpreserved (EA055)							
SS028, SS034, SS037	**23-Aug-2021**	**----**	----	----	**06-Sep-2021**	06-Sep-2021	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)							
SS028, SS034, SS037	**23-Aug-2021**	**----**	----	----	**15-Sep-2021**	19-Feb-2022	✓
Soil Glass Jar - Unpreserved (EA150H)							
SS114, SS118	**22-Aug-2021**	**----**	----	----	**15-Sep-2021**	18-Feb-2022	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA152: Soil Particle Density							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA152)							
SS028, SS034, SS037	**23-Aug-2021**	**----**	----	----	**15-Sep-2021**	19-Feb-2022	✓
Soil Glass Jar - Unpreserved (EA152)							
SS114, SS118	**22-Aug-2021**	**----**	----	----	**15-Sep-2021**	18-Feb-2022	✓
ED007: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED007)							
SS118	**22-Aug-2021**	**09-Sep-2021**	19-Sep-2021	✓	**09-Sep-2021**	19-Sep-2021	✓
Soil Glass Jar - Unpreserved (ED007)							
SS028	**23-Aug-2021**	**09-Sep-2021**	20-Sep-2021	✓	**09-Sep-2021**	20-Sep-2021	✓
ED008: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED008)							
SS114	**22-Aug-2021**	**09-Sep-2021**	19-Sep-2021	✓	**09-Sep-2021**	19-Sep-2021	✓
Soil Glass Jar - Unpreserved (ED008)							
SS034, SS037	**23-Aug-2021**	**09-Sep-2021**	20-Sep-2021	✓	**09-Sep-2021**	20-Sep-2021	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
SS114, SS118	**22-Aug-2021**	**09-Sep-2021**	18-Feb-2022	✓	**09-Sep-2021**	18-Feb-2022	✓
Soil Glass Jar - Unpreserved (EG005T)							
SS028, SS034, SS037	**23-Aug-2021**	**09-Sep-2021**	19-Feb-2022	✓	**09-Sep-2021**	19-Feb-2022	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066	**22-Aug-2021**	**14-Sep-2021**	18-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022	**22-Aug-2021**	**15-Sep-2021**	18-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031	**23-Aug-2021**	**15-Sep-2021**	19-Feb-2022	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**23-Aug-2021**	**16-Sep-2021**	19-Feb-2022	✓	**----**	----	----
EP004: Organic Matter							
Soil Glass Jar - Unpreserved (EP004)							
SS114, SS118	**22-Aug-2021**	**13-Sep-2021**	19-Sep-2021	✓	**13-Sep-2021**	19-Sep-2021	✓
Soil Glass Jar - Unpreserved (EP004)							
SS028, SS034, SS037	**23-Aug-2021**	**13-Sep-2021**	20-Sep-2021	✓	**13-Sep-2021**	20-Sep-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066, SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022	**22-Aug-2021**	**09-Sep-2021**	18-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031, SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**23-Aug-2021**	**09-Sep-2021**	19-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066, SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022	**22-Aug-2021**	**09-Sep-2021**	18-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031, SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**23-Aug-2021**	**09-Sep-2021**	19-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066, SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022	**22-Aug-2021**	**09-Sep-2021**	18-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031, SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**23-Aug-2021**	**09-Sep-2021**	19-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066, SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022	**22-Aug-2021**	**09-Sep-2021**	18-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031, SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**23-Aug-2021**	**09-Sep-2021**	19-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066, SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022	**22-Aug-2021**	**09-Sep-2021**	18-Feb-2022	✓	**09-Sep-2021**	19-Oct-2021	✓
HDPE Soil Jar (EP231X)							
SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031, SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**23-Aug-2021**	**09-Sep-2021**	19-Feb-2022	✓	**09-Sep-2021**	19-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

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-SUT)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022, SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031	**15-Sep-2021**	**17-Sep-2021**	14-Mar-2022	✓	**17-Sep-2021**	14-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**16-Sep-2021**	**17-Sep-2021**	15-Mar-2022	✓	**17-Sep-2021**	15-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW738, TBW739, TBW742, TBW743, TBW744, TBW748	**19-Aug-2021**	**10-Sep-2021**	15-Feb-2022	✓	**10-Sep-2021**	15-Feb-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-SUT)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022, SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031	**15-Sep-2021**	**17-Sep-2021**	14-Mar-2022	✓	**17-Sep-2021**	14-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**16-Sep-2021**	**17-Sep-2021**	15-Mar-2022	✓	**17-Sep-2021**	15-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW738, TBW739, TBW742, TBW743, TBW744, TBW748	**19-Aug-2021**	**10-Sep-2021**	15-Feb-2022	✓	**10-Sep-2021**	15-Feb-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-SUT)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022, SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031	**15-Sep-2021**	**17-Sep-2021**	14-Mar-2022	✓	**17-Sep-2021**	14-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**16-Sep-2021**	**17-Sep-2021**	15-Mar-2022	✓	**17-Sep-2021**	15-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW738, TBW739, TBW742, TBW743, TBW744, TBW748	**19-Aug-2021**	**10-Sep-2021**	15-Feb-2022	✓	**10-Sep-2021**	15-Feb-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-SUT)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022, SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031	**15-Sep-2021**	**17-Sep-2021**	14-Mar-2022	✓	**17-Sep-2021**	14-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**16-Sep-2021**	**17-Sep-2021**	15-Mar-2022	✓	**17-Sep-2021**	15-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW738, TBW739, TBW742, TBW743, TBW744, TBW748	**19-Aug-2021**	**10-Sep-2021**	15-Feb-2022	✓	**10-Sep-2021**	15-Feb-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-SUT)							
QC117, SS111, SS112, SS113, SS114, SS062, SS059, SS060, SS061, SS066	**14-Sep-2021**	**16-Sep-2021**	13-Mar-2022	✓	**16-Sep-2021**	13-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS063, SS064, SS065, SS084, SD024, SD023, SS083, SS085, SS086, SS099, SS101, SS102, SS100, SS115, SS116, SS117, SS118, SD021, SD022, SS120, SS119, SS121, SS122, SS017, SS018, SS020, SS019, SS021, SS022, SS023, SS024, SS025, SS026, SS027, QC125, SS028, SS029, SS030, SS032, SS031	**15-Sep-2021**	**17-Sep-2021**	14-Mar-2022	✓	**17-Sep-2021**	14-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
SS033, QC126, QC127, SS034, SS035, SS036, SS037, SS038, SS039	**16-Sep-2021**	**17-Sep-2021**	15-Mar-2022	✓	**17-Sep-2021**	15-Mar-2022	✓
HDPE (no PTFE) (EP231X-SUT)							
TBW738, TBW739, TBW742, TBW743, TBW744, TBW748	**19-Aug-2021**	**10-Sep-2021**	15-Feb-2022	✓	**10-Sep-2021**	15-Feb-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Electrical Conductivity (1:5)	EA010	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	72	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Electrical Conductivity (1:5)	EA010	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	72	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	72	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	72	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	0	9	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	67	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	5	67	7.46	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	5	67	**7.46**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	0	67	**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
pH in soil using a 0.01M CaCl2 extract	* EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3
Soil Particle Density	EA152	SOIL	Soil Particle Density by AS 1289.3.5.1: Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM Schedule B(3).
Exchangeable Cations with pre-treatment	ED008	SOIL	In house: Referenced to Rayment & Lyons Method 15A2. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Organic Matter	EP004	SOIL	In house: Referenced to AS1289.4.1.1. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	SOIL	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-SUT	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Lyons method 15A1. A 1M NH4Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Deionised Water Leach - Plastic Leaching Vessel	EN60-DIa-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Organic Matter	EP004-PR	SOIL	In house: Referenced to AS1289.4.1.1. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM Schedule B(3).
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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.

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.

Caitlyn Gibson

From: Mark Harris <mark.harris2@cardno.com.au>
Sent: Monday, 6 September 2021 7:19 AM
To: Caitlyn Gibson; Mickayla Graham
Subject: RE: CW1173100

EXTERNAL EMAIL*

Hi Caitlyn

Apologies for the delayed response.

Can we analyse the following samples for PFAS - Super Ultra Trace - Long Suite please:

- QC201-Water
- QC205-Water
- QC220-Water
- QC221-Water
- QC222-Water

And the samples below for PFAS full suite soil analysis, Deionised Water Leach - Plastic Leaching Vessel and PFAS - Supe Trace - Long Suite please:

- QC204-Soil-19/8/21
- QC206-Soil-19/8/21
- QC206-Soil-20/8/21
- QC210-Soil-21/8/21
- QC211-Soil-21/8/21
- QC212-Soil-21/8/21
- QC215-Soil-22/8/21
- QC216-Soil-22/8/21
- QC217-Soil-22/8/21
- QC225-Soil-24/8/21
- QC226-Soil-24/8/21
- QC227-Soil-24/8/21

Date/Time: 6/9/21
Chilled: (Yes) No
Temp: 12.4, 13.6, 16.1
Correction: -0.3
Final Temp: 14.4°C

Many thanks

Mark

#822758

Mark Harris
SENIOR ENVIRONMENTAL SCIENTIST
CARDNO

Cardno

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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.

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IANZ # 1290

Sample Receipt Advice

Company name:	Cardno (WA)
Contact name:	Mark Harris
Project name:	CW1173100
Project ID:	Not provided
Turnaround time:	5 Day
Date/Time received	Sep 6, 2021 7:19 AM
Eurofins reference	822758

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

Some discrepancies were found with the sample IDs from the containers to the IDs labelled on the bags. The sample IDs from the bags were used for all samples - please advise if this is incorrect.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Rhys Thomas on phone : (+61) 8 9251 9602 or by email: RhysThomas@eurofins.com

Results will be delivered electronically via email to Mark Harris - mark.harris2@cardno.com.au.

Note: A copy of these results will also be delivered to the general Cardno (WA) email address.

Cardno Consulting WA
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West Perth
WA 6005

NATA Accredited
Accreditation Number 1261
Site Number 20794

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

Attention: **Mark Harris**

Report **822758-W**
Project name CW1173100
Received Date Sep 06, 2021

Client Sample ID			QC201	QC205	QC220	QC221
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			B21-Se13527	B21-Se13528	B21-Se13529	B21-Se13530
Date Sampled			Not Provided[I12]	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace						
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	%	113	123	142	137
13C5-PFPeA (surr.)	1	%	106	109	126	121
13C5-PFHxA (surr.)	1	%	102	108	95	89
13C4-PFHpA (surr.)	1	%	85	100	93	88
13C8-PFOA (surr.)	1	%	140	152	120	119
13C5-PFNA (surr.)	1	%	134	144	129	134
13C6-PFDA (surr.)	1	%	104	120	116	114
13C2-PFUnDA (surr.)	1	%	91	87	100	104
13C2-PFDoDA (surr.)	1	%	55	47	71	72
13C2-PFTeDA (surr.)	1	%	113	107	104	103
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorononanesulfonic acid (PFNS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.0001	ug/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	124	113	99	102
18O2-PFHxS (surr.)	1	%	112	117	94	88
13C8-PFOS (surr.)	1	%	107	111	101	95

Client Sample ID			QC201	QC205	QC220	QC221
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			B21-Se13527	B21-Se13528	B21-Se13529	B21-Se13530
Date Sampled			Not Provided[I12]	Not Provided[I12]	Not Provided[I12]	Not Provided[I12]
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances- Ultra Trace						
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	%	54	61	107	95
D3-N-MeFOSA (surr.)	1	%	48	51	138	144
D5-N-EtFOSA (surr.)	1	%	44	44	131	139
D7-N-MeFOSE (surr.)	1	%	42	43	135	126
D9-N-EtFOSE (surr.)	1	%	37	33	147	153
D5-N-EtFOSAA (surr.)	1	%	40	21	65	56
D3-N-MeFOSAA (surr.)	1	%	40	20	61	57
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C2-4:2 FTSA (surr.)	1	%	147	195	165	165
13C2-6:2 FTSA (surr.)	1	%	161	171	158	142
13C2-8:2 FTSA (surr.)	1	%	102	113	117	132
13C2-10:2 FTSA (surr.)	1	%	81	102	130	139
PFASs Summations						
Sum (PFHxS + PFOS)*	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Sum of WA DWER PFAS (n=10)*	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
Sum of PFASs (n=30)*	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			QC222
Sample Matrix			Water
Eurofins Sample No.			B21-Se13531
Date Sampled			Not Provided[I12]
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace			
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

Client Sample ID			QC222
Sample Matrix			Water
Eurofins Sample No.			B21-Se13531
Date Sampled			Not Provided[I12]
Test/Reference	LOR	Unit	
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace			
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	%	127
13C5-PFPeA (surr.)	1	%	113
13C5-PFHxA (surr.)	1	%	89
13C4-PFHpA (surr.)	1	%	82
13C8-PFOA (surr.)	1	%	112
13C5-PFNA (surr.)	1	%	128
13C6-PFDA (surr.)	1	%	107
13C2-PFUnDA (surr.)	1	%	87
13C2-PFDoDA (surr.)	1	%	72
13C2-PFTeDA (surr.)	1	%	94
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001
Perfluorononanesulfonic acid (PFNS)[N15]	0.001	ug/L	< 0.001
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.001	ug/L	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	< 0.001
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.0001	ug/L	< 0.0001
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001
13C3-PFBS (surr.)	1	%	97
18O2-PFHxS (surr.)	1	%	81
13C8-PFOS (surr.)	1	%	91
Perfluoroalkyl sulfonamido substances- Ultra Trace			
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	%	97
D3-N-MeFOSA (surr.)	1	%	132
D5-N-EtFOSA (surr.)	1	%	128
D7-N-MeFOSE (surr.)	1	%	122
D9-N-EtFOSE (surr.)	1	%	138
D5-N-EtFOSAA (surr.)	1	%	70
D3-N-MeFOSAA (surr.)	1	%	61

Client Sample ID			QC222
Sample Matrix			**Water**
Eurofins Sample No.			**B21-Se13531**
Date Sampled			**Not Provided**[I12]
Test/Reference	LOR	Unit	
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.001	ug/L	< 0.001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.001	ug/L	< 0.001
13C2-4:2 FTSA (surr.)	1	%	162
13C2-6:2 FTSA (surr.)	1	%	146
13C2-8:2 FTSA (surr.)	1	%	114
13C2-10:2 FTSA (surr.)	1	%	115
PFASs Summations			
Sum (PFHxS + PFOS)*	0.001	ug/L	< 0.001
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	< 0.001
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	< 0.001
Sum of WA DWER PFAS (n=10)*	0.005	ug/L	< 0.005
Sum of PFASs (n=30)*	0.005	ug/L	< 0.005

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) - Ultra Trace			
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace	Brisbane	Sep 08, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace	Brisbane	Sep 08, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances- Ultra Trace	Brisbane	Sep 08, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) Ultra trace			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace	Brisbane	Sep 08, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Brisbane	Sep 08, 2021	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			

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Company Name: Cardno (WA)
Address: 11 Harvest Terrace
West Perth
WA 6005

Project Name: CW1173100

Order No.:
Report #: 822758
Phone: 08 9273 3888
Fax: 08 9388 3831

Received: Sep 6, 2021 7:19 AM
Due: Sep 13, 2021
Priority: 5 Day
Contact Name: Mark Harris

Eurofins Analytical Services Manager : Rhys Thomas

Sample Detail						AUS Leaching Procedure	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace	Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA # 1261 Site # 1254										
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
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	QC201	Not Provided		Water	B21-Se13527				X	
2	QC205	Not Provided		Water	B21-Se13528				X	
3	QC220	Not Provided		Water	B21-Se13529				X	
4	QC221	Not Provided		Water	B21-Se13530				X	
5	QC222	Not Provided		Water	B21-Se13531				X	
6	QC204	Aug 19, 2021		Soil	B21-Se13532		X	X		
7	QC206	Aug 19, 2021		Soil	B21-Se13533		X	X		
8	QC206	Aug 20, 2021		Soil	B21-Se13534		X	X		
9	QC210	Aug 21, 2021		Soil	B21-Se13535		X	X		
10	QC211	Aug 21, 2021		Soil	B21-Se13536		X	X		

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Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
11	QC212	Aug 21, 2021		Soil	B21-Se13537		X	X		
12	QC215	Aug 22, 2021		Soil	B21-Se13538		X	X		
13	QC216	Aug 22, 2021		Soil	B21-Se13539		X	X		
14	QC217	Aug 22, 2021		Soil	B21-Se13540		X	X		
15	QC225	Aug 24, 2021		Soil	B21-Se13541		X	X		
16	QC226	Aug 24, 2021		Soil	B21-Se13542		X	X		
17	QC227	Aug 24, 2021		Soil	B21-Se13543		X	X		
18	QC204	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13544	X				X
19	QC206	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13545	X				X

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Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
20	QC206	Aug 20, 2021		AUS Leachate - Reagent Water	B21-Se13546	X				X
21	QC210	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13547	X				X
22	QC211	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13548	X				X
23	QC212	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13549	X				X
24	QC215	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13550	X				X

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Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
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Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
25	QC216	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13551	X				X
26	QC217	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13552	X				X
27	QC225	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13553	X				X
28	QC226	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13554	X				X
29	QC227	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13555	X				X

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Sydney Laboratory - NATA # 1261 Site # 18217					
Brisbane Laboratory - NATA # 1261 Site # 20794	X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079					
Perth Laboratory - NATA # 2377 Site # 2370					
External Laboratory					
Test Counts	12	12	12	5	12

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) - Ultra Trace							
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 sulfonic acids (PFSAs)- Ultra Trace							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.001			0.001	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.001			0.001	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.001			0.001	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.001			0.001	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.001			0.001	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.001			0.001	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.0001			0.0001	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.001			0.001	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances- Ultra Trace							
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							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.001			0.001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.005			0.005	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.001			0.001	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace							
Perfluorobutanoic acid (PFBA)	%	117			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	115			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	117			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	98			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	95			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	110			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	99			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	118			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	142			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	131			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	80			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							
Perfluorobutanesulfonic acid (PFBS)	%	100			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	93			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	100			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	68			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	117			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	146			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	105			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	69			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Ultra Trace							
Perfluorooctane sulfonamide (FOSA)	%	116			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	81			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	81			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	150			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	107			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	109			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	103			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	106			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	110			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	107			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	125			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace				Result 1					
Perfluorobutanoic acid (PFBA)	B21-Se13811	NCP	%	95			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B21-Se13811	NCP	%	110			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B21-Se13811	NCP	%	112			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B21-Se13811	NCP	%	90			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B21-Se13811	NCP	%	84			50-150	Pass	
Perfluorononanoic acid (PFNA)	B21-Se13811	NCP	%	97			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B21-Se13811	NCP	%	101			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B21-Se13811	NCP	%	116			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B21-Se13811	NCP	%	138			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B21-Se13811	NCP	%	111			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B21-Se13811	NCP	%	95			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	B21-Se13811	NCP	%	114			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B21-Se13811	NCP	%	115			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B21-Se13811	NCP	%	111			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B21-Se13811	NCP	%	148			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B21-Se13811	NCP	%	113			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B21-Se13811	NCP	%	99			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B21-Se13811	NCP	%	113			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B21-Se13616	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B21-Se13616	NCP	ug/L	< 0.05	< 0.05	<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	N/A
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
I12	Where sampling date has not been provided, Eurofins | Environment Testing is not able to determine whether analysis has been performed within recommended holding times.
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:

Rhys Thomas	Analytical Services Manager
Sarah McCallion	Senior Analyst-PFAS (QLD)



Glenn Jackson
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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NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
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Attention: **Mark Harris**

Report **822758-S**
Project name CW1173100
Received Date Sep 06, 2021

Client Sample ID			QC204	QC206	QC206	QC210
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Se13532	B21-Se13533	B21-Se13534	B21-Se13535
Date Sampled			Aug 19, 2021	Aug 19, 2021	Aug 20, 2021	Aug 21, 2021
Test/Reference	LOR	Unit				
% Moisture	1	%	15	20	1.9	3.3
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	91	73	90	93
13C5-PFPeA (surr.)	1	%	94	76	93	94
13C5-PFHxA (surr.)	1	%	93	75	96	95
13C4-PFHpA (surr.)	1	%	87	70	89	91
13C8-PFOA (surr.)	1	%	86	70	87	86
13C5-PFNA (surr.)	1	%	90	74	95	95
13C6-PFDA (surr.)	1	%	118	98	120	119
13C2-PFUnDA (surr.)	1	%	129	106	136	134
13C2-PFDoDA (surr.)	1	%	120	99	126	118
13C2-PFTeDA (surr.)	1	%	110	97	124	114
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	93	70	93	89
D3-N-MeFOSA (surr.)	1	%	132	104	142	126

Client Sample ID			QC204	QC206	QC206	QC210
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Se13532	B21-Se13533	B21-Se13534	B21-Se13535
Date Sampled			Aug 19, 2021	Aug 19, 2021	Aug 20, 2021	Aug 21, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D5-N-EtFOSA (surr.)	1	%	94	72	101	90
D7-N-MeFOSE (surr.)	1	%	91	72	91	86
D9-N-EtFOSE (surr.)	1	%	91	71	98	88
D5-N-EtFOSAA (surr.)	1	%	105	78	85	105
D3-N-MeFOSAA (surr.)	1	%	115	86	86	111
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	93	76	95	97
18O2-PFHxS (surr.)	1	%	83	67	97	88
13C8-PFOS (surr.)	1	%	104	85	115	110
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	93	77	78	87
13C2-6:2 FTSA (surr.)	1	%	91	69	85	83
13C2-8:2 FTSA (surr.)	1	%	87	83	89	95
13C2-10:2 FTSA (surr.)	1	%	92	73	99	102
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Client Sample ID			QC211	QC212	QC215	QC216
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Se13536	B21-Se13537	B21-Se13538	B21-Se13539
Date Sampled			Aug 21, 2021	Aug 21, 2021	Aug 22, 2021	Aug 22, 2021
Test/Reference	LOR	Unit				
% Moisture	1	%	< 1	< 1	< 1	1.7
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5

Client Sample ID			QC211	QC212	QC215	QC216
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Se13536	B21-Se13537	B21-Se13538	B21-Se13539
Date Sampled			Aug 21, 2021	Aug 21, 2021	Aug 22, 2021	Aug 22, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	5.9	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	83	97	87	76
13C5-PFPeA (surr.)	1	%	86	101	110	94
13C5-PFHxA (surr.)	1	%	87	99	116	109
13C4-PFHpA (surr.)	1	%	80	94	120	109
13C8-PFOA (surr.)	1	%	85	94	119	112
13C5-PFNA (surr.)	1	%	84	105	129	126
13C6-PFDA (surr.)	1	%	119	134	121	115
13C2-PFUnDA (surr.)	1	%	126	135	122	112
13C2-PFDoDA (surr.)	1	%	112	127	109	104
13C2-PFTeDA (surr.)	1	%	114	131	146	131
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	84	89	67	65
D3-N-MeFOSA (surr.)	1	%	121	120	110	96
D5-N-EtFOSA (surr.)	1	%	95	91	87	73
D7-N-MeFOSE (surr.)	1	%	92	88	64	62
D9-N-EtFOSE (surr.)	1	%	92	89	78	67
D5-N-EtFOSAA (surr.)	1	%	77	105	81	76
D3-N-MeFOSAA (surr.)	1	%	75	113	45	70
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	93	103	111	97
18O2-PFHxS (surr.)	1	%	86	97	101	87
13C8-PFOS (surr.)	1	%	103	112	108	96

Client Sample ID			QC211	QC212	QC215	QC216
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Se13536	B21-Se13537	B21-Se13538	B21-Se13539
Date Sampled			Aug 21, 2021	Aug 21, 2021	Aug 22, 2021	Aug 22, 2021
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	200	< 10	580	200
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	140	25
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	71	12
13C2-4:2 FTSA (surr.)	1	%	64	103	177	163
13C2-6:2 FTSA (surr.)	1	%	97	119	62	187
13C2-8:2 FTSA (surr.)	1	%	87	123	154	189
13C2-10:2 FTSA (surr.)	1	%	91	99	53	63
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	5.9	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	5.9	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	200	< 10	725.9	225
Sum of PFASs (n=30)*	50	ug/kg	200	< 50	796.9	237

Client Sample ID			QC217	QC225	QC226	QC227
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Se13540	B21-Se13541	B21-Se13542	B21-Se13543
Date Sampled			Aug 22, 2021	Aug 24, 2021	Aug 24, 2021	Aug 24, 2021
Test/Reference	LOR	Unit				
% Moisture	1	%	11	12	16	3.6
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	76	113	104	108
13C5-PFPeA (surr.)	1	%	87	104	107	102
13C5-PFHxA (surr.)	1	%	89	117	113	106
13C4-PFHpA (surr.)	1	%	85	91	94	90
13C8-PFOA (surr.)	1	%	76	113	109	93
13C5-PFNA (surr.)	1	%	84	83	94	100
13C6-PFDA (surr.)	1	%	101	83	93	93
13C2-PFUnDA (surr.)	1	%	119	130	127	118
13C2-PFDoDA (surr.)	1	%	117	116	106	114
13C2-PFTeDA (surr.)	1	%	122	88	83	87

Client Sample ID			QC217	QC225	QC226	QC227
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Se13540	B21-Se13541	B21-Se13542	B21-Se13543
Date Sampled			Aug 22, 2021	Aug 24, 2021	Aug 24, 2021	Aug 24, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	76	71	74	77
D3-N-MeFOSA (surr.)	1	%	112	85	84	111
D5-N-EtFOSA (surr.)	1	%	88	60	61	63
D7-N-MeFOSE (surr.)	1	%	80	116	96	103
D9-N-EtFOSE (surr.)	1	%	87	116	87	106
D5-N-EtFOSAA (surr.)	1	%	85	80	77	67
D3-N-MeFOSAA (surr.)	1	%	92	90	85	61
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	91	90	86	92
18O2-PFHxS (surr.)	1	%	80	99	68	79
13C8-PFOS (surr.)	1	%	106	94	104	100
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	81	83	98	52
13C2-6:2 FTSA (surr.)	1	%	63	54	64	50
13C2-8:2 FTSA (surr.)	1	%	63	71	106	82
13C2-10:2 FTSA (surr.)	1	%	77	103	96	110
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
% Moisture	Brisbane	Sep 08, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Company Name: Cardno (WA)
Address: 11 Harvest Terrace
West Perth
WA 6005

Project Name: CW1173100

Order No.:
Report #: 822758
Phone: 08 9273 3888
Fax: 08 9388 3831

Received: Sep 6, 2021 7:19 AM
Due: Sep 13, 2021
Priority: 5 Day
Contact Name: Mark Harris

Eurofins Analytical Services Manager : Rhys Thomas

Sample Detail						AUS Leaching Procedure	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace	Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA # 1261 Site # 1254										
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
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	QC201	Not Provided		Water	B21-Se13527				X	
2	QC205	Not Provided		Water	B21-Se13528				X	
3	QC220	Not Provided		Water	B21-Se13529				X	
4	QC221	Not Provided		Water	B21-Se13530				X	
5	QC222	Not Provided		Water	B21-Se13531				X	
6	QC204	Aug 19, 2021		Soil	B21-Se13532		X	X		
7	QC206	Aug 19, 2021		Soil	B21-Se13533		X	X		
8	QC206	Aug 20, 2021		Soil	B21-Se13534		X	X		
9	QC210	Aug 21, 2021		Soil	B21-Se13535		X	X		
10	QC211	Aug 21, 2021		Soil	B21-Se13536		X	X		

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Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
11	QC212	Aug 21, 2021		Soil	B21-Se13537		X	X		
12	QC215	Aug 22, 2021		Soil	B21-Se13538		X	X		
13	QC216	Aug 22, 2021		Soil	B21-Se13539		X	X		
14	QC217	Aug 22, 2021		Soil	B21-Se13540		X	X		
15	QC225	Aug 24, 2021		Soil	B21-Se13541		X	X		
16	QC226	Aug 24, 2021		Soil	B21-Se13542		X	X		
17	QC227	Aug 24, 2021		Soil	B21-Se13543		X	X		
18	QC204	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13544	X				X
19	QC206	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13545	X				X

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Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
20	QC206	Aug 20, 2021		AUS Leachate - Reagent Water	B21-Se13546	X				X
21	QC210	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13547	X				X
22	QC211	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13548	X				X
23	QC212	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13549	X				X
24	QC215	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13550	X				X

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Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
25	QC216	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13551	X				X
26	QC217	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13552	X				X
27	QC225	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13553	X				X
28	QC226	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13554	X				X
29	QC227	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13555	X				X

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Melbourne Laboratory - NATA # 1261 Site # 1254					
Sydney Laboratory - NATA # 1261 Site # 18217					
Brisbane Laboratory - NATA # 1261 Site # 20794	X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079					
Perth Laboratory - NATA # 2377 Site # 2370					
External Laboratory					
Test Counts	12	12	12	5	12

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/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 5			5	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	99			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	99			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	118			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	91			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	92			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	83			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	123			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	128			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	114			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	126			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	93			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	133			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	93			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	116			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	95			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	68			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	79			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	100			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	97			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	86			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	136			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	92			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	108			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	107			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	107			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	102			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	137			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	85			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)	B21-Se14444	NCP	%	104			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B21-Se14444	NCP	%	109			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B21-Se14444	NCP	%	106			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B21-Se14444	NCP	%	97			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B21-Se14444	NCP	%	90			50-150	Pass	
Perfluorononanoic acid (PFNA)	B21-Se14444	NCP	%	97			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B21-Se14444	NCP	%	126			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B21-Se14444	NCP	%	114			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B21-Se14444	NCP	%	106			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B21-Se14444	NCP	%	124			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B21-Se14444	NCP	%	96			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B21-Se14444	NCP	%	135			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B21-Se14444	NCP	%	88			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B21-Se14444	NCP	%	106			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B21-Se14444	NCP	%	105			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B21-Se14444	NCP	%	93			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B21-Se14444	NCP	%	77			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B21-Se14444	NCP	%	98			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B21-Se14444	NCP	%	77			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	B21-Se14444	NCP	%	86			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B21-Se14444	NCP	%	126			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B21-Se14444	NCP	%	73			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B21-Se14444	NCP	%	122			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B21-Se14444	NCP	%	125			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B21-Se14444	NCP	%	95			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B21-Se14444	NCP	%	102			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B21-Se14444	NCP	%	81			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B21-Se14444	NCP	%	122			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B21-Se14444	NCP	%	116			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B21-Se14444	NCP	%	84			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)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B21-Se13532	CP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B21-Se13532	CP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B21-Se13532	CP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B21-Se13532	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B21-Se13537	CP	%	< 1	1.8	93	30%	Fail	Q15
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorododecanoic acid (PFDoDA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B21-Se13541	CP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B21-Se13541	CP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B21-Se13541	CP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B21-Se13541	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorodecanoic acid (PFDA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B21-Se13543	CP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B21-Se13543	CP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B21-Se13543	CP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B21-Se13543	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	N/A
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).
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:

Rhys Thomas	Analytical Services Manager
Sarah McCallion	Senior Analyst-PFAS (QLD)



Glenn Jackson
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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NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
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Attention: **Mark Harris**

Report **822758-L**
Project name CW1173100
Received Date Sep 06, 2021

Client Sample ID			**QC204**	**QC206**	**QC206**	**QC210**
Sample Matrix			**AUS Leachate - Reagent Water**	**AUS Leachate - Reagent Water**	**AUS Leachate - Reagent Water**	**AUS Leachate - Reagent Water**
Eurofins Sample No.			**B21-Se13544**	**B21-Se13545**	**B21-Se13546**	**B21-Se13547**
Date Sampled			**Aug 19, 2021**	**Aug 19, 2021**	**Aug 20, 2021**	**Aug 21, 2021**
Test/Reference	LOR	Unit				
AUS Leaching Procedure						
Leachate Fluid[C01]		comment	4.0	4.0	4.0	4.0
pH (initial)	0.1	pH Units	7.5	9.0	7.5	8.6
pH (Leachate fluid)	0.1	pH Units	5.4	5.4	5.4	5.4
pH (off)	0.1	pH Units	8.8	9.0	7.8	9.0
PFASs Summations						
Sum (PFHxS + PFOS)*	0.001	ug/L	< 0.001	0.001	0.002	< 0.001
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	< 0.001	0.001	0.002	< 0.001
Sum of PFASs (n=30)*	0.005	ug/L	< 0.005	< 0.005	0.009	< 0.005
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	< 0.001	0.001	0.002	< 0.001
Sum of WA DWER PFAS (n=10)*	0.005	ug/L	< 0.005	< 0.005	0.009	< 0.005
Perfluoroalkyl sulfonamido substances- Trace						
Perfluorooctane sulfonamide (FOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
13C8-FOSA (surr.)	1	%	59	82	72	86
D3-N-MeFOSA (surr.)	1	%	38	48	46	42
D5-N-EtFOSA (surr.)	1	%	42	48	55	44
D7-N-MeFOSE (surr.)	1	%	28	31	36	30
D9-N-EtFOSE (surr.)	1	%	28	32	37	31
D5-N-EtFOSAA (surr.)	1	%	27	13	40	17
D3-N-MeFOSAA (surr.)	1	%	23	INT	34	15
Perfluoroalkyl carboxylic acids (PFCAs) - Trace						
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005	< 0.005	0.007	< 0.005
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			QC204	QC206	QC206	QC210
Sample Matrix			AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water
Eurofins Sample No.			B21-Se13544	B21-Se13545	B21-Se13546	B21-Se13547
Date Sampled			Aug 19, 2021	Aug 19, 2021	Aug 20, 2021	Aug 21, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs) - Trace						
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C4-PFBA (surr.)	1	%	67	72	79	82
13C5-PFPeA (surr.)	1	%	99	109	118	119
13C5-PFHxA (surr.)	1	%	91	110	123	127
13C4-PFHpA (surr.)	1	%	75	93	102	104
13C8-PFOA (surr.)	1	%	75	89	108	108
13C5-PFNA (surr.)	1	%	85	97	125	115
13C6-PFDA (surr.)	1	%	46	57	91	68
13C2-PFUnDA (surr.)	1	%	38	46	83	50
13C2-PFDoDA (surr.)	1	%	37	42	69	47
13C2-PFTeDA (surr.)	1	%	43	47	60	58
Perfluoroalkyl sulfonic acids (PFSAs)- Trace						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorononanesulfonic acid (PFNS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.001	ug/L	< 0.001	0.001	0.002	< 0.001
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	89	110	120	118
18O2-PFHxS (surr.)	1	%	82	101	110	103
13C8-PFOS (surr.)	1	%	57	74	106	77
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C2-4:2 FTSA (surr.)	1	%	60	74	88	108
13C2-6:2 FTSA (surr.)	1	%	50	47	72	78
13C2-8:2 FTSA (surr.)	1	%	45	54	103	82
13C2-10:2 FTSA (surr.)	1	%	47	34	66	57

Client Sample ID			QC211	QC212	QC215	QC216
Sample Matrix			AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water
Eurofins Sample No.			B21-Se13548	B21-Se13549	B21-Se13550	B21-Se13551
Date Sampled			Aug 21, 2021	Aug 21, 2021	Aug 22, 2021	Aug 22, 2021
Test/Reference	LOR	Unit				
AUS Leaching Procedure						
Leachate Fluid[C01]		comment	4.0	4.0	4.0	4.0
pH (initial)	0.1	pH Units	8.1	7.6	8.6	9.1
pH (Leachate fluid)	0.1	pH Units	5.4	5.4	5.4	5.4
pH (off)	0.1	pH Units	8.5	7.7	9.9	9.2
PFASs Summations						
Sum (PFHxS + PFOS)*	0.001	ug/L	< 0.001	0.005	0.001	0.007
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	0.11	0.005	0.171	0.037
Sum of PFASs (n=30)*	0.005	ug/L	3.122	0.006	7.152	4.125
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	0.11	0.005	0.171	0.034
Sum of WA DWER PFAS (n=10)*	0.005	ug/L	3.09	0.006	7.05	4.095
Perfluoroalkyl sulfonamido substances- Trace						
Perfluorooctane sulfonamide (FOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
13C8-FOSA (surr.)	1	%	61	69	88	88
D3-N-MeFOSA (surr.)	1	%	36	39	45	46
D5-N-EtFOSA (surr.)	1	%	41	43	55	51
D7-N-MeFOSE (surr.)	1	%	27	28	24	27
D9-N-EtFOSE (surr.)	1	%	29	28	29	30
D5-N-EtFOSAA (surr.)	1	%	26	38	45	28
D3-N-MeFOSAA (surr.)	1	%	19	28	41	23
Perfluoroalkyl carboxylic acids (PFCAs) - Trace						
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	0.012	< 0.005	0.11	0.068
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	0.017	< 0.001	0.043	0.082
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	0.076	< 0.001	0.20	0.13
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	0.031	< 0.001	0.026	0.008
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	0.11	< 0.001	0.17	0.030
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	0.027	< 0.001	0.011	0.003
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	0.005	< 0.001	0.042	0.014
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C4-PFBA (surr.)	1	%	73	70	66	68
13C5-PFPeA (surr.)	1	%	106	107	96	87
13C5-PFHxA (surr.)	1	%	92	106	109	114
13C4-PFHpA (surr.)	1	%	76	85	131	127
13C8-PFOA (surr.)	1	%	60	81	59	56
13C5-PFNA (surr.)	1	%	82	95	105	119
13C6-PFDA (surr.)	1	%	51	62	99	94

Client Sample ID			QC211	QC212	QC215	QC216
Sample Matrix			AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water
Eurofins Sample No.			B21-Se13548	B21-Se13549	B21-Se13550	B21-Se13551
Date Sampled			Aug 21, 2021	Aug 21, 2021	Aug 22, 2021	Aug 22, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs) - Trace						
13C2-PFUnDA (surr.)	1	%	40	52	95	79
13C2-PFDoDA (surr.)	1	%	40	47	76	68
13C2-PFTeDA (surr.)	1	%	52	48	72	65
Perfluoroalkyl sulfonic acids (PFSAs)- Trace						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorononanesulfonic acid (PFNS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	0.003
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.001	ug/L	< 0.001	0.005	0.001	0.004
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	97	108	122	120
18O2-PFHxS (surr.)	1	%	95	98	17	103
13C8-PFOS (surr.)	1	%	61	71	91	86
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	0.003	0.002
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	2.8	< 0.005	4.5	3.2
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	0.044	0.001	2.0	0.57
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	0.046	0.011
13C2-4:2 FTSA (surr.)	1	%	65	71	170	150
13C2-6:2 FTSA (surr.)	1	%	150	56	93	181
13C2-8:2 FTSA (surr.)	1	%	47	71	121	92
13C2-10:2 FTSA (surr.)	1	%	42	50	141	142

Client Sample ID			QC217	QC225	QC226	QC227
Sample Matrix			AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water
Eurofins Sample No.			B21-Se13552	B21-Se13553	B21-Se13554	B21-Se13555
Date Sampled			Aug 22, 2021	Aug 24, 2021	Aug 24, 2021	Aug 24, 2021
Test/Reference	LOR	Unit				
AUS Leaching Procedure						
Leachate Fluid[C01]		comment	4.0	4.0	4.0	4.0
pH (initial)	0.1	pH Units	6.4	7.8	7.6	8.1
pH (Leachate fluid)	0.1	pH Units	5.4	5.7	5.7	5.7
pH (off)	0.1	pH Units	6.1	7.7	7.1	8.9
PFASs Summations						
Sum (PFHxS + PFOS)*	0.001	ug/L	< 0.001	0.004	< 0.001	< 0.001
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	< 0.001	0.004	< 0.001	< 0.001
Sum of PFASs (n=30)*	0.005	ug/L	< 0.005	0.005	< 0.005	< 0.005
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	< 0.001	0.004	< 0.001	< 0.001
Sum of WA DWER PFAS (n=10)*	0.005	ug/L	< 0.005	0.005	< 0.005	< 0.005

Client Sample ID			QC217	QC225	QC226	QC227
Sample Matrix			AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water
Eurofins Sample No.			B21-Se13552	B21-Se13553	B21-Se13554	B21-Se13555
Date Sampled			Aug 22, 2021	Aug 24, 2021	Aug 24, 2021	Aug 24, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances- Trace						
Perfluorooctane sulfonamide (FOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
13C8-FOSA (surr.)	1	%	40	50	58	56
D3-N-MeFOSA (surr.)	1	%	29	83	104	108
D5-N-EtFOSA (surr.)	1	%	33	81	110	92
D7-N-MeFOSE (surr.)	1	%	22	45	63	53
D9-N-EtFOSE (surr.)	1	%	24	45	57	55
D5-N-EtFOSAA (surr.)	1	%	11	58	45	52
D3-N-MeFOSAA (surr.)	1	%	INT	59	64	75
Perfluoroalkyl carboxylic acids (PFCAs) - Trace						
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	0.002
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001	0.001	< 0.001	0.002
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C4-PFBA (surr.)	1	%	43	88	96	97
13C5-PFPeA (surr.)	1	%	75	81	95	93
13C5-PFHxA (surr.)	1	%	76	79	84	81
13C4-PFHpA (surr.)	1	%	62	73	83	87
13C8-PFOA (surr.)	1	%	62	109	131	121
13C5-PFNA (surr.)	1	%	76	82	92	78
13C6-PFDA (surr.)	1	%	50	83	99	82
13C2-PFUnDA (surr.)	1	%	46	78	101	84
13C2-PFDoDA (surr.)	1	%	44	49	77	74
13C2-PFTeDA (surr.)	1	%	43	42	59	70
Perfluoroalkyl sulfonic acids (PFSAs)- Trace						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorononanesulfonic acid (PFNS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.001	ug/L	< 0.001	0.004	< 0.001	< 0.001

Client Sample ID			QC217	QC225	QC226	QC227
Sample Matrix			AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water	AUS Leachate - Reagent Water
Eurofins Sample No.			B21-Se13552	B21-Se13553	B21-Se13554	B21-Se13555
Date Sampled			Aug 22, 2021	Aug 24, 2021	Aug 24, 2021	Aug 24, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonic acids (PFSAs)- Trace						
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	94	69	89	87
18O2-PFHxS (surr.)	1	%	83	72	88	81
13C8-PFOS (surr.)	1	%	65	92	93	74
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005	< 0.005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001	< 0.001
13C2-4:2 FTSA (surr.)	1	%	49	90	112	89
13C2-6:2 FTSA (surr.)	1	%	35	69	96	108
13C2-8:2 FTSA (surr.)	1	%	41	78	95	82
13C2-10:2 FTSA (surr.)	1	%	29	81	200	INT

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
AUS Leaching Procedure	Brisbane	Sep 10, 2021	7 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			
Per- and Polyfluoroalkyl Substances (PFASs) - Trace			
Perfluoroalkyl sulfonamido substances- Trace	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			
Perfluoroalkyl sulfonic acids (PFSAs)- Trace	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace	Brisbane	Sep 10, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS) - low level			

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Company Name: Cardno (WA)
Address: 11 Harvest Terrace
West Perth
WA 6005

Project Name: CW1173100

Order No.:
Report #: 822758
Phone: 08 9273 3888
Fax: 08 9388 3831

Received: Sep 6, 2021 7:19 AM
Due: Sep 13, 2021
Priority: 5 Day
Contact Name: Mark Harris

Eurofins Analytical Services Manager : Rhys Thomas

Sample Detail						AUS Leaching Procedure	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace	Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA # 1261 Site # 1254										
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
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	QC201	Not Provided		Water	B21-Se13527				X	
2	QC205	Not Provided		Water	B21-Se13528				X	
3	QC220	Not Provided		Water	B21-Se13529				X	
4	QC221	Not Provided		Water	B21-Se13530				X	
5	QC222	Not Provided		Water	B21-Se13531				X	
6	QC204	Aug 19, 2021		Soil	B21-Se13532		X	X		
7	QC206	Aug 19, 2021		Soil	B21-Se13533		X	X		
8	QC206	Aug 20, 2021		Soil	B21-Se13534		X	X		
9	QC210	Aug 21, 2021		Soil	B21-Se13535		X	X		
10	QC211	Aug 21, 2021		Soil	B21-Se13536		X	X		

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Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
11	QC212	Aug 21, 2021		Soil	B21-Se13537		X	X		
12	QC215	Aug 22, 2021		Soil	B21-Se13538		X	X		
13	QC216	Aug 22, 2021		Soil	B21-Se13539		X	X		
14	QC217	Aug 22, 2021		Soil	B21-Se13540		X	X		
15	QC225	Aug 24, 2021		Soil	B21-Se13541		X	X		
16	QC226	Aug 24, 2021		Soil	B21-Se13542		X	X		
17	QC227	Aug 24, 2021		Soil	B21-Se13543		X	X		
18	QC204	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13544	X				X
19	QC206	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13545	X				X

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Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
20	QC206	Aug 20, 2021		AUS Leachate - Reagent Water	B21-Se13546	X				X
21	QC210	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13547	X				X
22	QC211	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13548	X				X
23	QC212	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13549	X				X
24	QC215	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13550	X				X

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Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
25	QC216	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13551	X				X
26	QC217	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13552	X				X
27	QC225	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13553	X				X
28	QC226	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13554	X				X
29	QC227	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13555	X				X

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Sydney Laboratory - NATA # 1261 Site # 18217					
Brisbane Laboratory - NATA # 1261 Site # 20794	X	X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079					
Perth Laboratory - NATA # 2377 Site # 2370					
External Laboratory					
Test Counts	12	12	12	5	12

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 sulfonamido substances- Trace							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.005			0.005	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.005			0.005	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.005			0.005	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.005			0.005	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.005			0.005	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.005			0.005	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.005			0.005	Pass	
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs) - Trace							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.005			0.005	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.001			0.001	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.001			0.001	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.001			0.001	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.001			0.001	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.001			0.001	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.001			0.001	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.001			0.001	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.001			0.001	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)- Trace							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.001			0.001	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.001			0.001	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.001			0.001	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.001			0.001	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.001			0.001	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.001			0.001	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.001			0.001	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.001			0.001	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.001			0.001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.005			0.005	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.001			0.001	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.001			0.001	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	N/A
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other
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:

Rhys Thomas	Analytical Services Manager
Sarah McCallion	Senior Analyst-PFAS (QLD)



Glenn Jackson
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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Company Name: Cardno (WA)
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WA 6005

Project Name: CW1173100

Order No.:
Report #: 822758
Phone: 08 9273 3888
Fax: 08 9388 3831

Received: Sep 6, 2021 7:19 AM
Due: Sep 13, 2021
Priority: 5 Day
Contact Name: Mark Harris

Eurofins Analytical Services Manager : Rhys Thomas

Sample Detail						AUS Leaching Procedure	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)	Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace	Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254										
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794						X	X	X	X	X
Perth Laboratory - NATA Site # 23736										
Mayfield Laboratory - NATA Site # 25079										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	QC201	Not Provided		Water	B21-Se13527				X	
2	QC205	Not Provided		Water	B21-Se13528				X	
3	QC220	Not Provided		Water	B21-Se13529				X	
4	QC221	Not Provided		Water	B21-Se13530				X	
5	QC222	Not Provided		Water	B21-Se13531				X	
6	QC204	Aug 19, 2021		Soil	B21-Se13532		X	X		
7	QC206	Aug 19, 2021		Soil	B21-Se13533		X	X		
8	QC206	Aug 20, 2021		Soil	B21-Se13534		X	X		
9	QC210	Aug 21, 2021		Soil	B21-Se13535		X	X		
10	QC211	Aug 21, 2021		Soil	B21-Se13536		X	X		

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Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794						X	X	X	X	X
Perth Laboratory - NATA Site # 23736										
Mayfield Laboratory - NATA Site # 25079										
External Laboratory										
11	QC212	Aug 21, 2021		Soil	B21-Se13537		X	X		
12	QC215	Aug 22, 2021		Soil	B21-Se13538		X	X		
13	QC216	Aug 22, 2021		Soil	B21-Se13539		X	X		
14	QC217	Aug 22, 2021		Soil	B21-Se13540		X	X		
15	QC225	Aug 24, 2021		Soil	B21-Se13541		X	X		
16	QC226	Aug 24, 2021		Soil	B21-Se13542		X	X		
17	QC227	Aug 24, 2021		Soil	B21-Se13543		X	X		
18	QC204	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13544	X				X
19	QC206	Aug 19, 2021		AUS Leachate - Reagent Water	B21-Se13545	X				X

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Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794						X	X	X	X	X
Perth Laboratory - NATA Site # 23736										
Mayfield Laboratory - NATA Site # 25079										
External Laboratory										
20	QC206	Aug 20, 2021		AUS Leachate - Reagent Water	B21-Se13546	X				X
21	QC210	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13547	X				X
22	QC211	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13548	X				X
23	QC212	Aug 21, 2021		AUS Leachate - Reagent Water	B21-Se13549	X				X
24	QC215	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13550	X				X

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Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794						X	X	X	X	X
Perth Laboratory - NATA Site # 23736										
Mayfield Laboratory - NATA Site # 25079										
External Laboratory										
25	QC216	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13551	X				X
26	QC217	Aug 22, 2021		AUS Leachate - Reagent Water	B21-Se13552	X				X
27	QC225	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13553	X				X
28	QC226	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13554	X				X
29	QC227	Aug 24, 2021		AUS Leachate - Reagent Water	B21-Se13555	X				X

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Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794	X	X	X	X	X
Perth Laboratory - NATA Site # 23736					
Mayfield Laboratory - NATA Site # 25079					
External Laboratory					
Test Counts	12	12	12	5	12

APPENDIX

L

REGULATED AND UNREGULATED PFAS COMPOUNDS

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An assessment of the regulated and unregulated PFAS compounds for AoPC was undertaken to determine the composition of the PFAS concentrations. Assessment of the concentrations in the various media belonged to the following groups:

- Perfluoroalkyl Sulfonic Acids;
- Perfluoroalkyl Carboxylic Acids; and
- Fluorotelomer Sulfonic Acids.

The results of the preliminary PFAS assessment indicate that there are five main source areas across the Site, namely:

- AoPC 1 (AC-16) - Coondawanna Airport;
- AoPC 7 (No BHP ID) - New Firefighting Training Ground;
- AoPC 9 (AC-22) - MAC Medical Centre;
- AoPC 10 (AC-09) - Heavy Vehicle Workshops; and
- AoPC 12 (AC-03) - Bioremediation Farm.

An assessment of the regulated and unregulated PFAS compounds for the AoPC indicated above was undertaken to assess the composition of the PFAS concentrations, it is noted that only PFAS compounds that recorded concentrations above the laboratory LOR have been assessed.

Table L-1 to L-5 displays the composition of the PFAS compounds for each of the five areas that are considered the main PFAS source areas.

It is noted that concentrations of Perfluoroalkane sulfonamides (FASAs), such as perfluorooctane sulfonamide (FOSA), that are used as raw material to make perfluoroalkyl sulfonamide substances that are used for surfactants and surface treatments were recorded below the laboratory LOR in all surface soil, groundwater, surface water and sediment samples with the exception of two surface soil leachate concentrations of FOSA within samples collected from the fire training ground (AoPC 7), with a maximum concentration of 0.0007 µg/L above the laboratory LOR of 0.0005 µg/L. FASAs can degrade to form Perfluoroalkyl Acids such as PFOS.

The composition of the sum of PFAS is displayed utilising the legend displayed below:

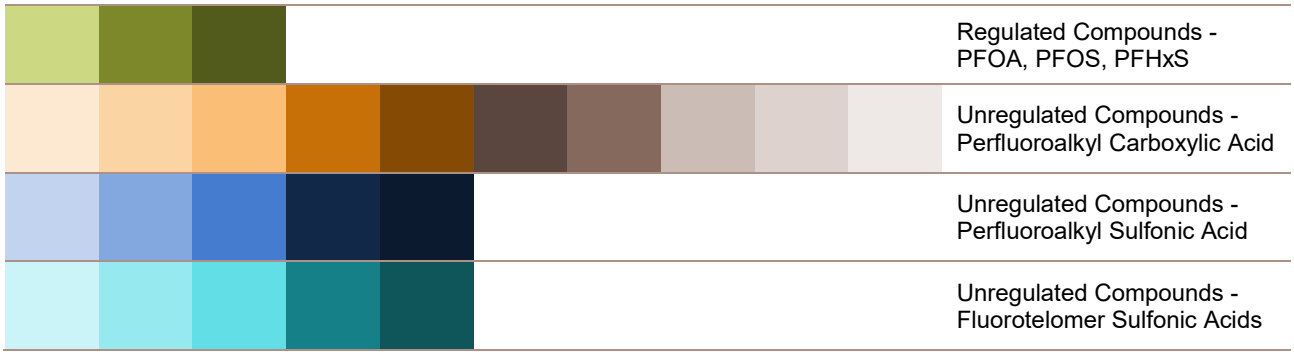
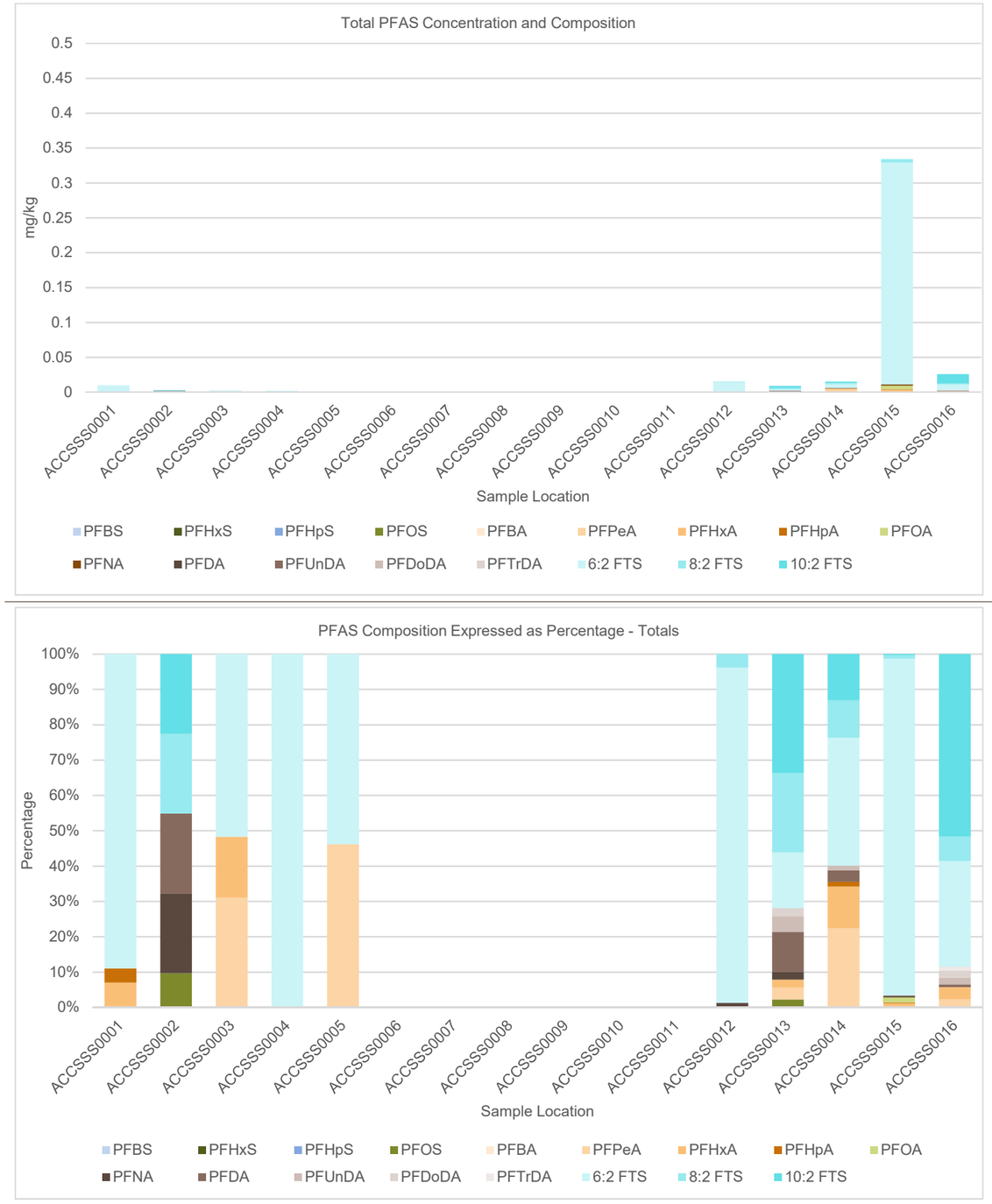
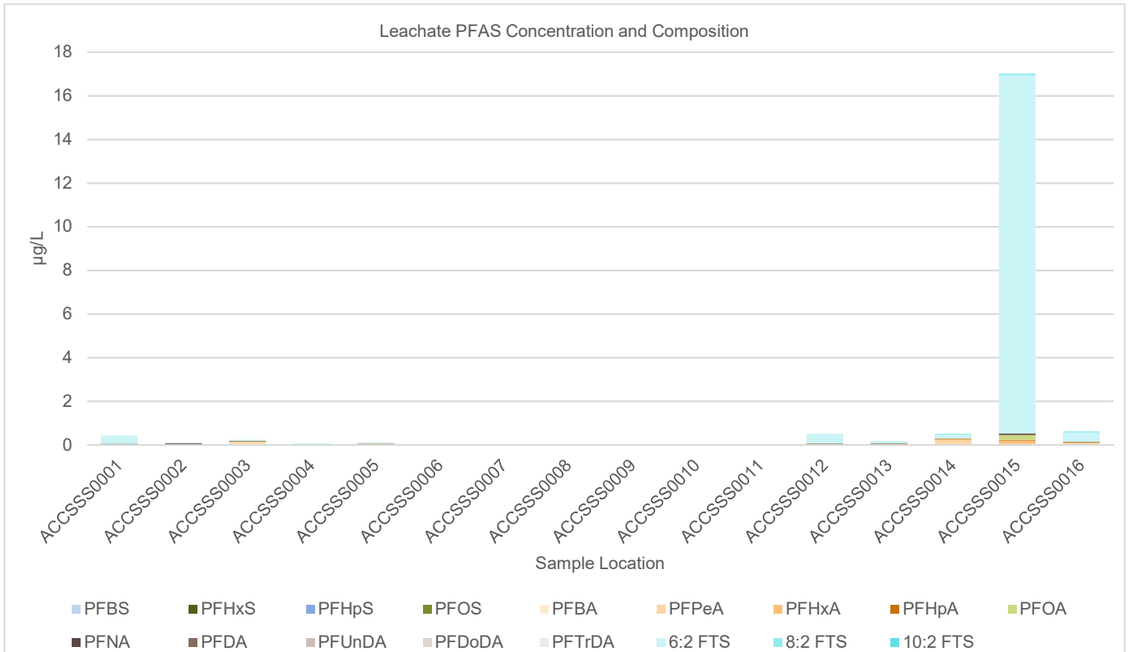


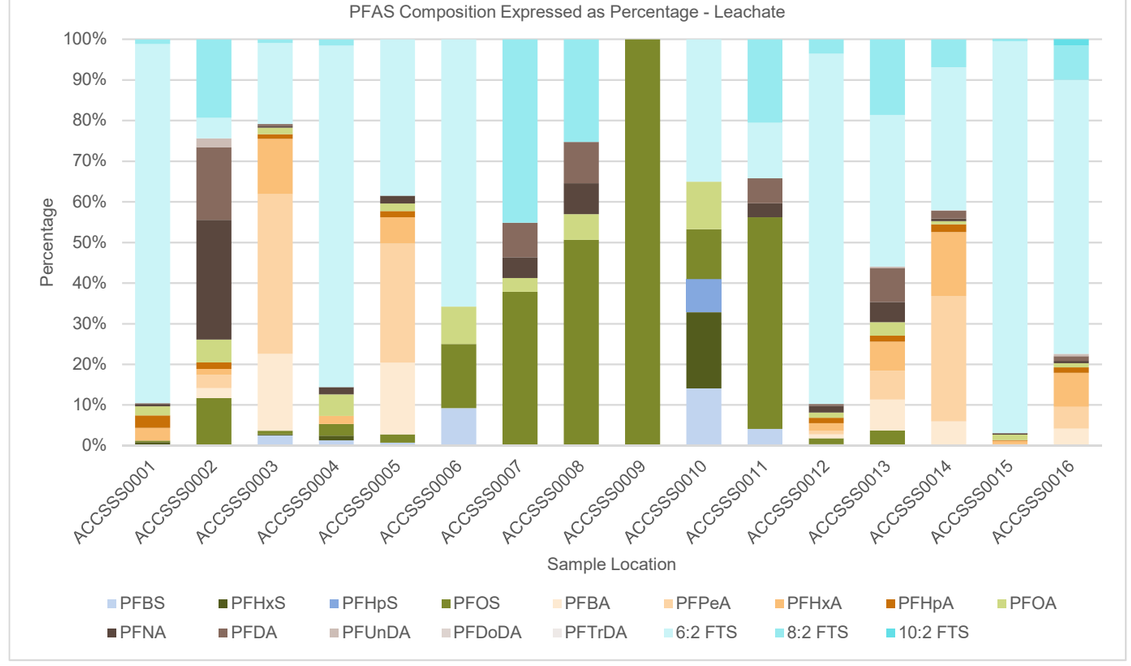
Table L-1 AoPC 1 Coondawanna Airport - PFAS Composition

Soil Results



Leachate Results

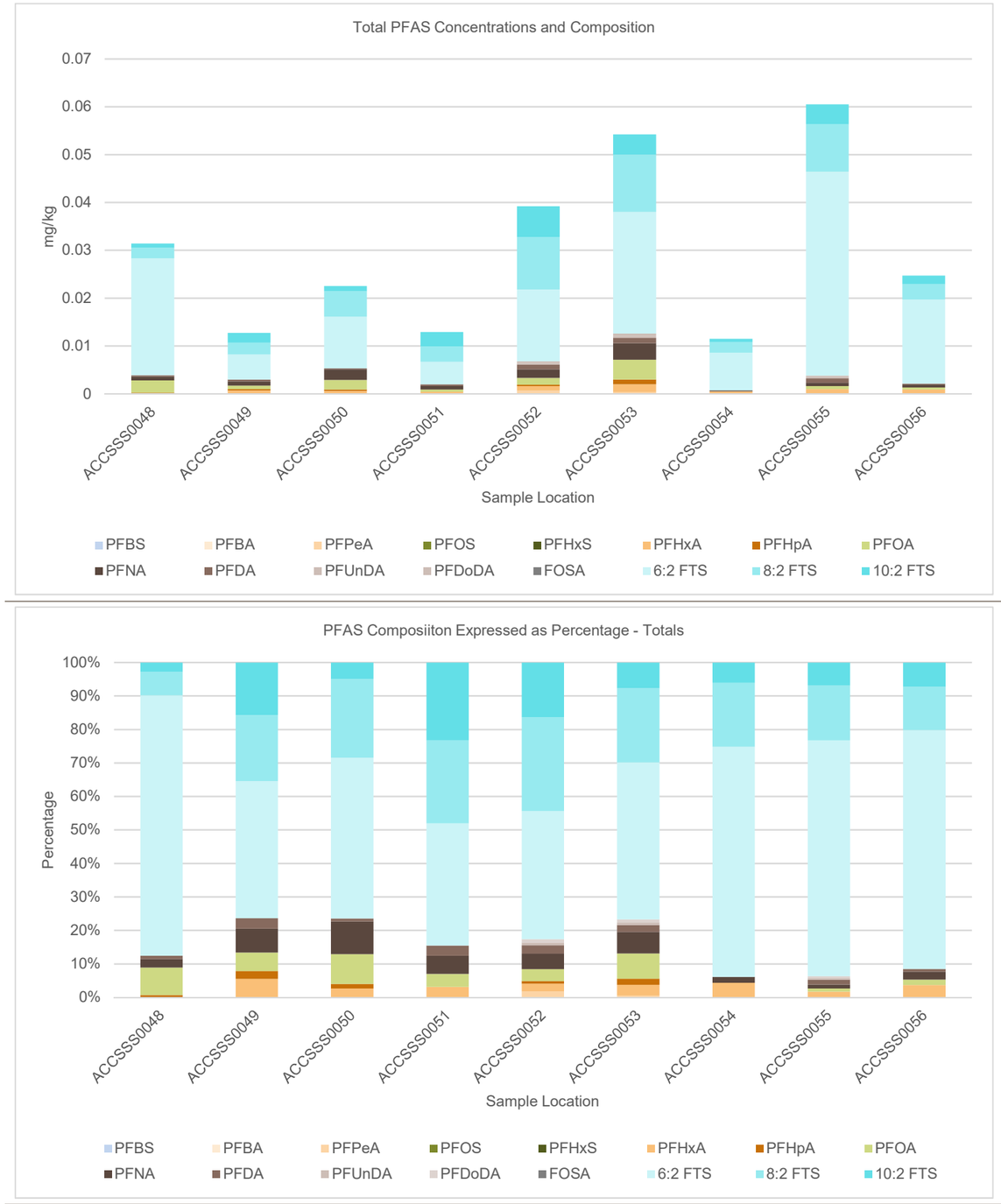




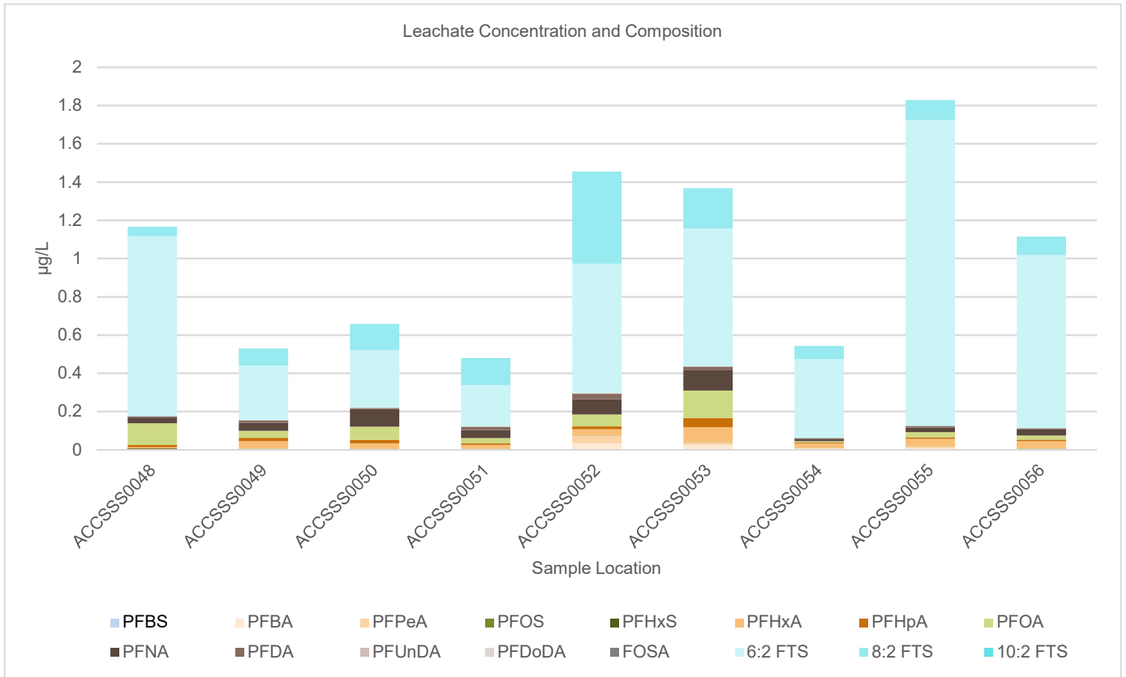
The results indicate that the highest concentration of sum of PFAS was recorded in ACCSSS0015 located to the northwest of the airport apron, where it is reported training exercises utilising foams has been undertaken. The composition of the PFAS concentrations within the total soil results comprise predominantly of the unregulated Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups. However, it is noted that there is no discernible composition of the sum of PFAS concentrations around the apron with the percentage of the PFAS groups varying per sample, this is particularly evident within the leachate groups where low concentrations of Perfluoroalkyl Sulfonic Acids including PFOS leached from the surface soils from samples located to the south of the apron.

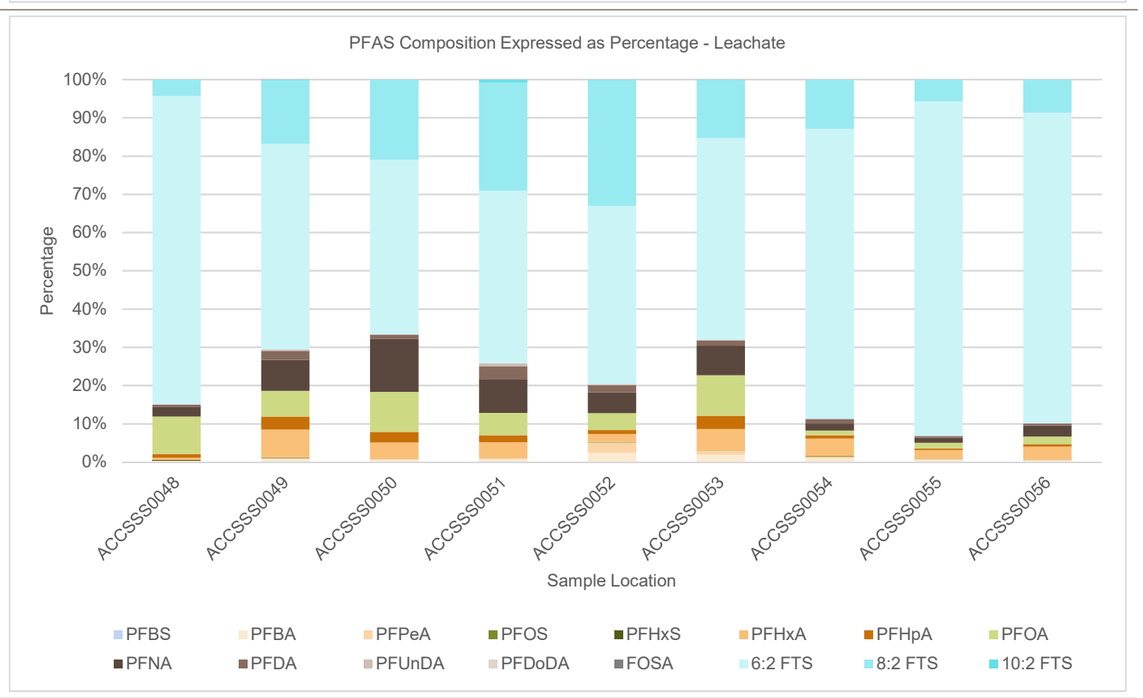
Table L-2 AoPC 7 New Firefighting Training Ground - PFAS Composition

Soil Results



Leachate Results

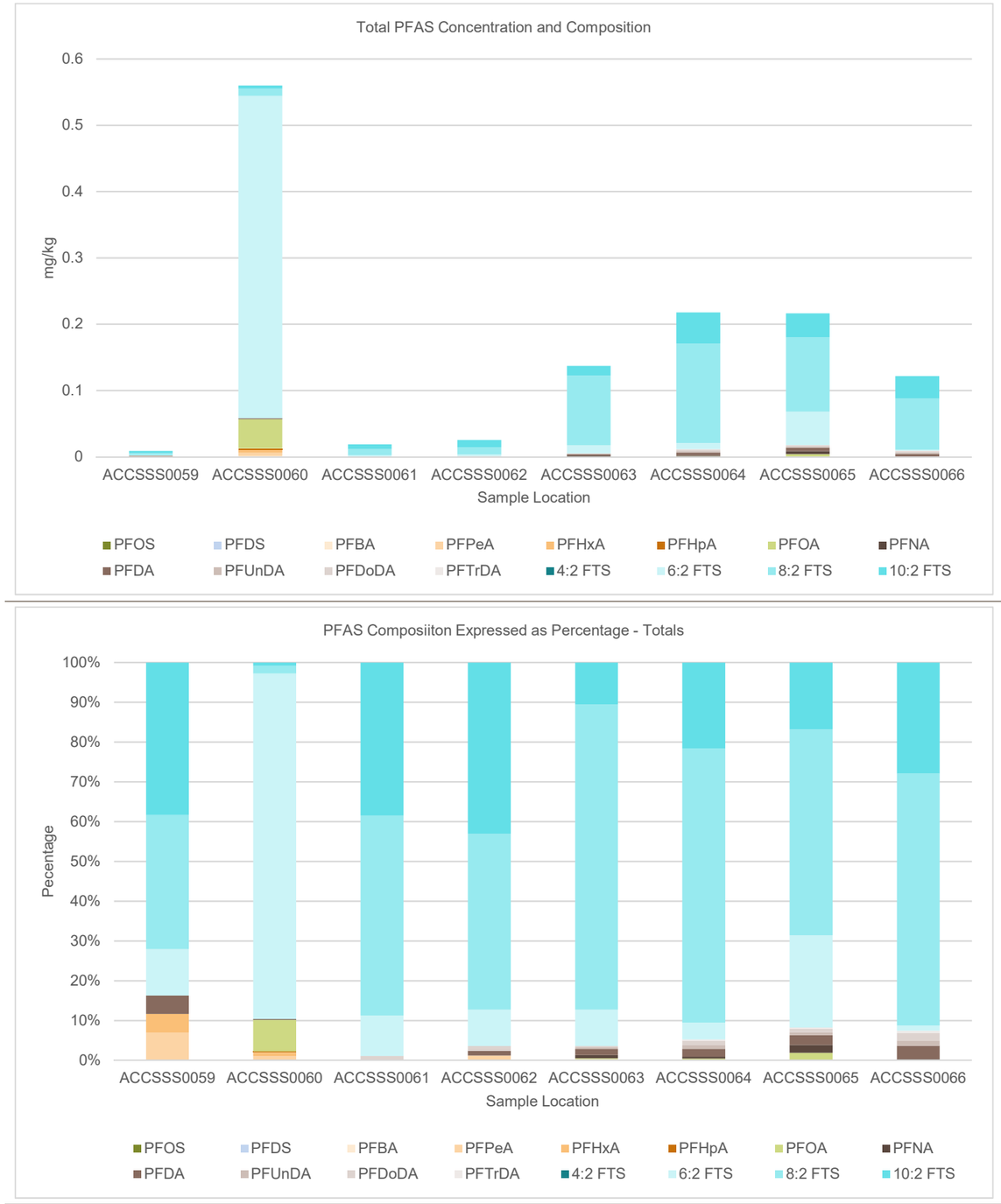




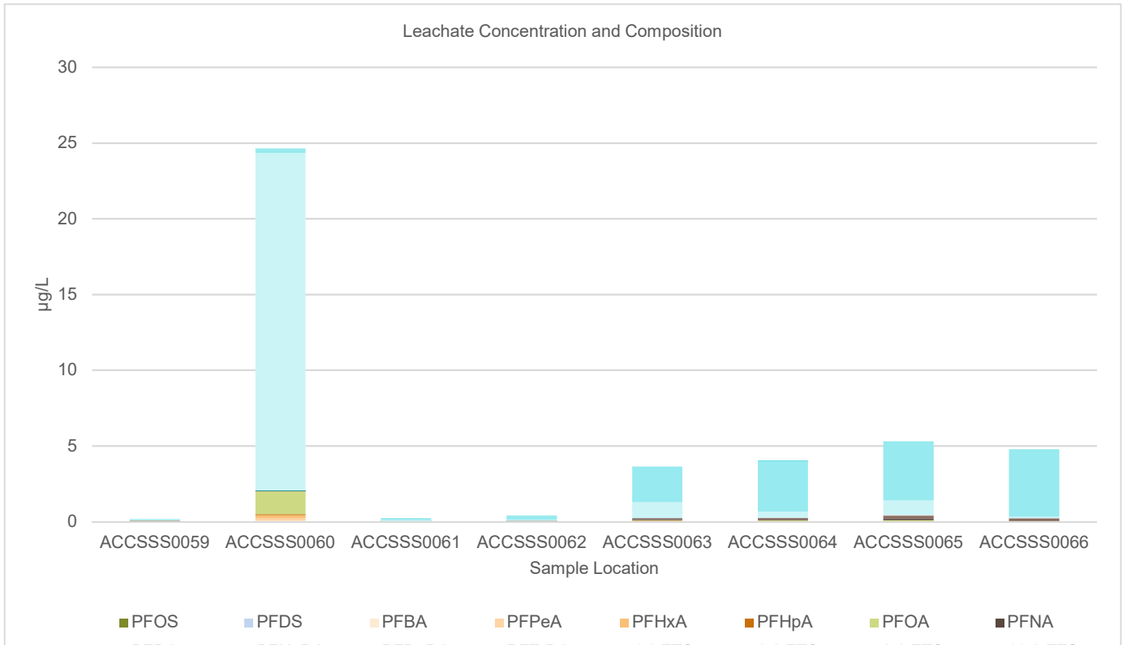
The concentrations and composition of the sum of PFAS results across the fire training ground are reasonably consistent, with the composotion of the total surface soils and leachate results indicating up to approximately 95% of unregulated compounds associated with the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups. Detectable PFOA concentrations were recorded in all samples analysed. It is understood that fire training exercises utilising foam has been undertaken on automobiles within the fire training area.

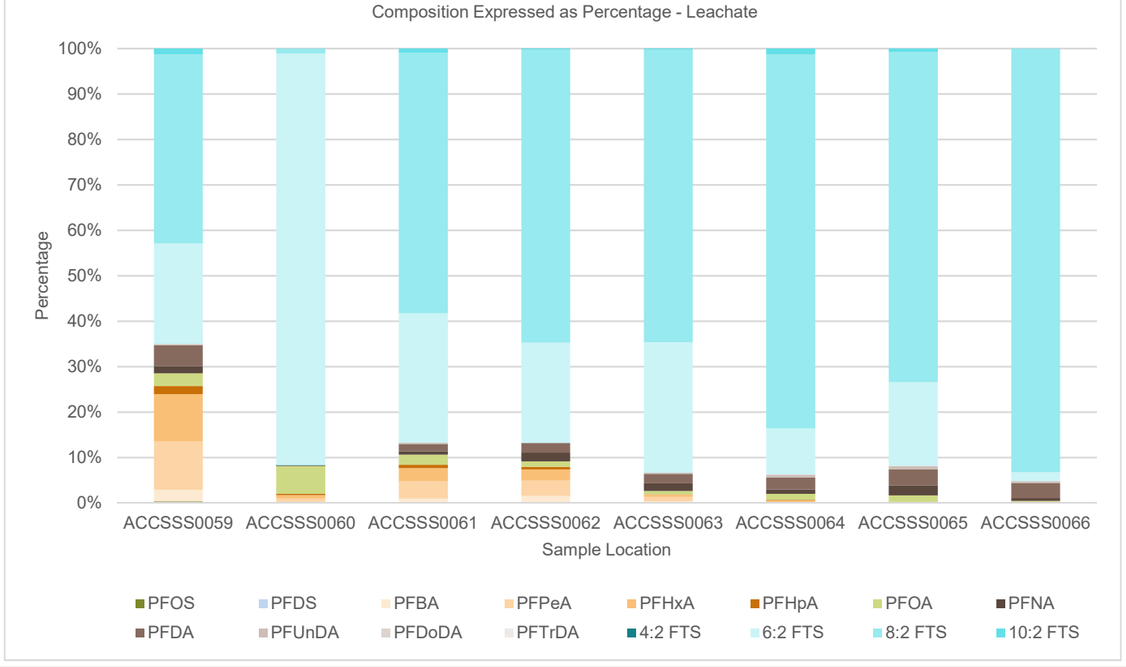
Table L-3 AoPC 9 MAC Medical Centre - PFAS Composition

Soil Results



Leachate Results

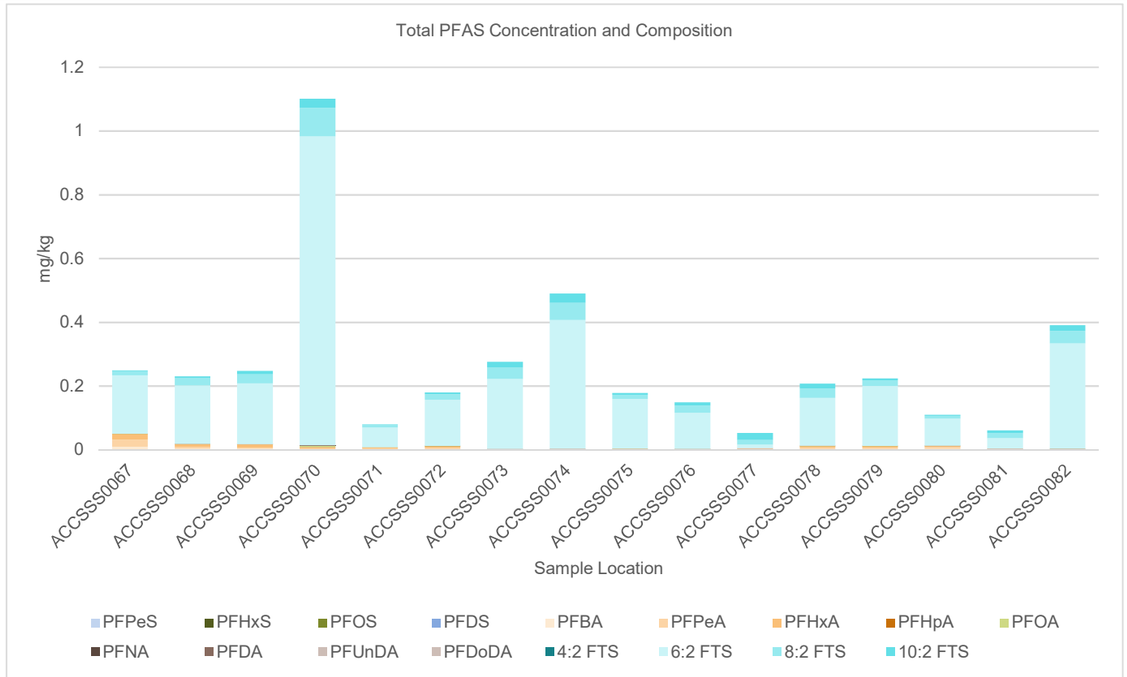


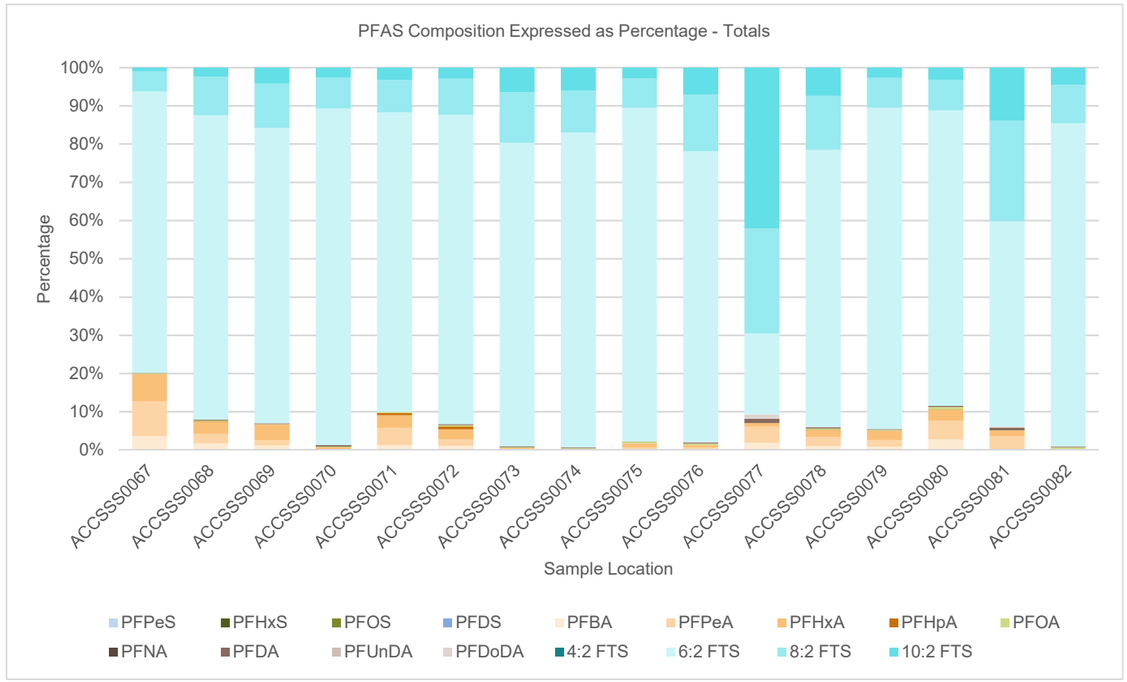


The highest sum of PFAS concentration was recorded in a sample located immediately adjacent to the concrete pad where the emergency vehicles are parked and equipment washed and maintained. The composition of the sum of PFAS results within the vicinity of the MAC Medical Centre are reasonably consistent, with the composition of the total surface soils and leachate results indicating up to 100% of unregulated compounds associated with the Perfluoroalkyl Carboxylic Acid and Fluorotelomer Sulfonic Acid groups. Detectable PFOA concentrations were recorded in one soil sample analysed (ACCSSS0060) and with seven of the eight leachate samples.

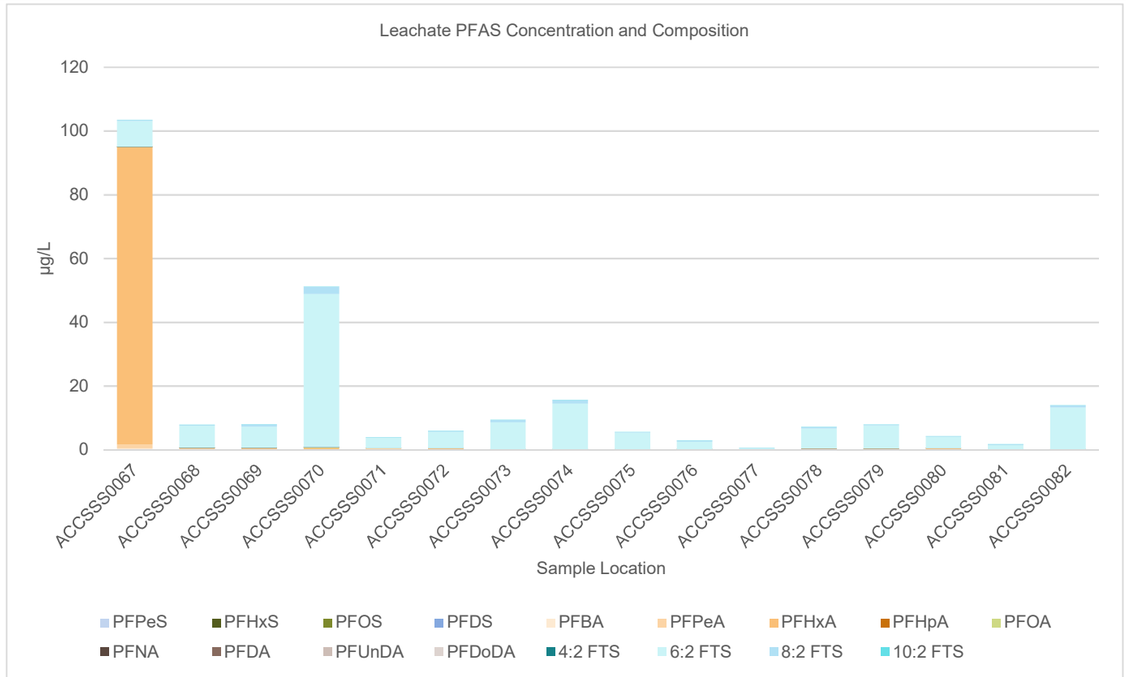
Table L-4 AoPC 10 Heavy Vehicle Workshops - PFAS Composition

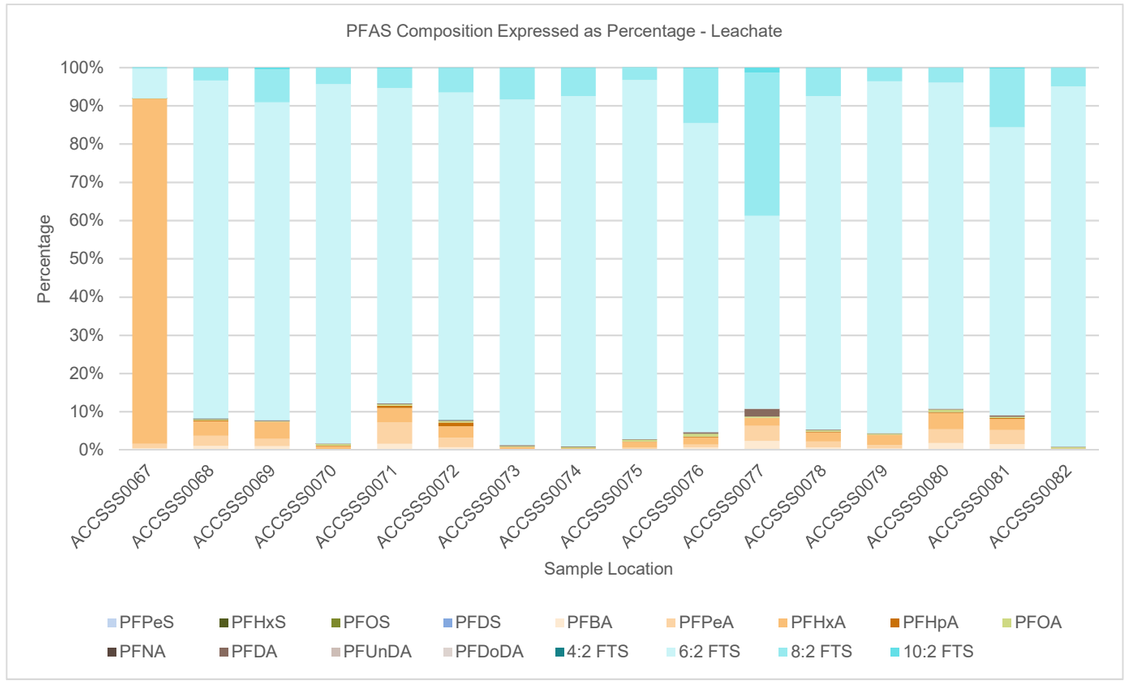
Soil Results





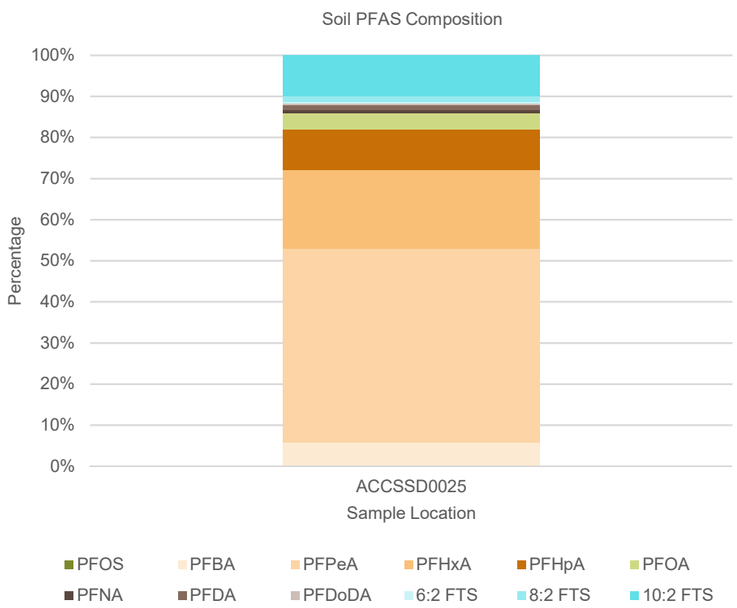
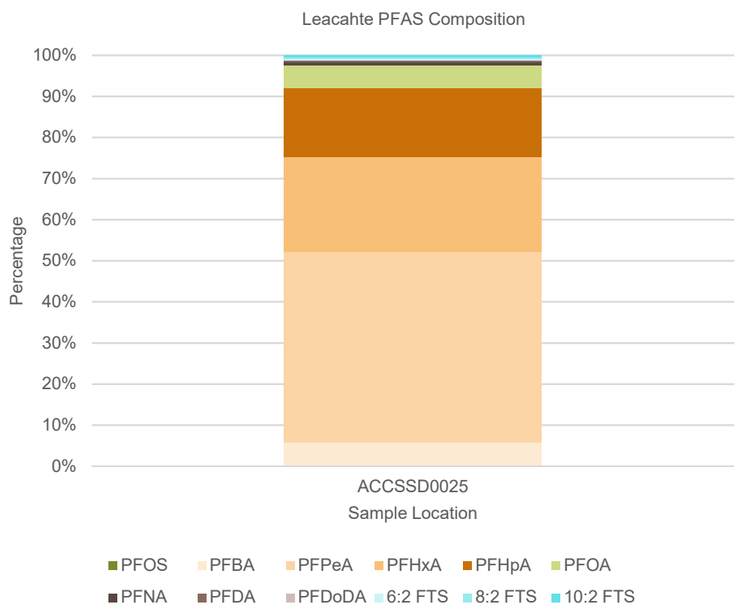
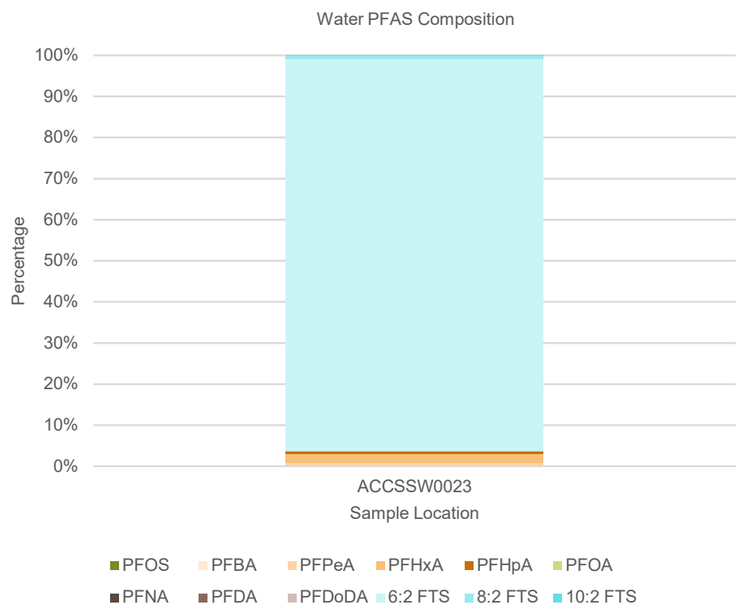
Leachate Results





The highest surface soil sum of PFAS concentration was recorded in a sample located at the entrance of Bay 18 of the workshop, with the highest leachate sum of PFAS concentration located at the entrance of Bay 7 of the central workshop. It is noted that the composition of the surface soil sum of PFAS results across the workshop area are reasonably consistent, with the composition of the total surface soils recording 80 - 99% of unregulated Fluorotelomer Sulfonic Acids. However, it is noted that that the composition of the leachate result in sample ASCSSS0067 comprises predominanntly of PFHxA, whilst present in the surface soil sample is more prominent in the leachate sample. It is also noted that the percentage of regulated compunds is neglible.

Table L-5 AoPC 12 Bioremediation Farm - PFAS Composition

Soil Result	Leachate Result	Water Result
		
The results of the soil analysis indicate that the sediment within the dry bioremediation cell predominantly comprises: ▪ PFBA ▪ PFPeA ▪ PFHxA ▪ PFHpA ▪ 10:2 FTS Regulated compounds, PFOA and PFOS, only contribute approximately 6% of the sum of PFAS concentration for the sample. It is noted that only a single sediment sample was collected from the cell and the PFAS composition of the sediment within the cell may vary, dependent on the source of the material.	The results of the leachate analysis indicate that the composition of the leachate is comparable to the soil analysis, in terms of percentage per compound, with the exception of 10:FTS presenting a smaller total percentage within the leachate analysis.	The composition of the surface water sample indicates the sum of PFAS concentration is predominantly comprised of 6:2 FTS. The water within the wet cell is sourced from OWS from across the Site including the Workshop OWS. As per the sample collected from the dry cell, only a single sample was collected from the cell and the composition of the water within the cell may vary over time dependent on on-site activities and source of the water.

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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