APPENDIX C

RTAW AFFF Management Plan

AFFF Management Plan

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1 Purpose

In July 2016, the Queensland Department of Environment and Heritage Protection (DEHP) introduced a policy to ban the use of AFFF firefighting foams containing fluorinated organic compounds, also known as PFAS (Per- and poly-fluoroalkyl substances) specifically:

- PFOS (perfluoro-octane sulfonate),
- PFOA (perfluorooctanoic acid), and
- PFHxS (Perfluorohexane sulfonate) (less common).

Products containing these compounds present a significant risk due to their persistence in the environment, bioaccumulation and toxicity. The policy requires that all fire fighting foams containing these compounds at specified concentrations must be phased out by 2019 at the latest. This requires any existing stocks of particular foams to be withdrawn from service by this date.

Rio Tinto Weipa has identified in consultation with CHUBB that the fire fighting foams currently used on site (CHUBB 3% and CHUBB 6%) do not meet the concentrations specified by EHP and are therefore required to be phased out by 2019.

This Management Plan details how Rio Tinto Weipa will manage AFFF on site until such time that a replacement product is implemented which is intended to be prior to 2019.

2 Definitions

AFFF: Aqueous film forming foam.

DEHP: Department of Environment and Heritage Protection.

Spill: An event that involves any volume of material discharging to the environment that has the potential for environmental impact. For example a diesel leak from a grader, bauxite spill into the estuary, a burst water pipe etc.

Bund or Bunding: A physical barrier that confines and prevents materials from discharging to the environment and allows recovery of materials in the event of a spill.

Absorbent: Products such as synthetic or organic pads, booms and powders that are used to contain spills. These are available in a variety of different forms and functions (refer to CLASSIC Spill Kit Selection Matrix).

Safety Data Sheets (SDS): A document that contains all the chemical details, safety and relevant information specific to a substance, presented in a standard format which the user can easily read to seek the information desired to safely use and handle of the chemical substance. Also provides emergency response and first aid information.

Waterway: Creek, river estuary or coastal waters.

Drain: Artificial watercourse, stormwater drain or man-made gully.

Secondary Containment: An additional measure to contain materials in the event of a spill. Examples include bunding and double skinned pipes or tanks.

3 Roles and Accountabilities

Role	Accountability
General Manager	• Ensure systems and resources are available to implement this procedure, maintain compliance and demonstrate a commitment to achieving full compliance with the DEHP Operational Policy by 2019.
Manager Health, Safety & Environment	• Ensure that this Management Plan meets the requirements of the Operational Policy. • Ensure that an appropriate replacement product is implemented and the AFFF products are completely phased out by 2019. • Review and update this procedure in accordance with CLASSIC Documentation and Document Control. • Make this standard available to all Rio Tinto Weipa employees and contractors. • Ensure that this Management Plan is removed from CLASSIC when a new product is implemented.
Department Managers	• Ensure that this Management Plan is implemented to manage the risks associated with AFFF products. • Identify significant hazard associated with AFFF use and manage them through the Prospect risk register review process and action management system. • Ensure requirements are communicated to the Superintendents, Leaders and Area Custodians.

Role	Accountability
Superintendents, Leaders and Area Custodians	• Communicate this Management Plan to all employees and contractors working in their area. • Identify risks associated with AFFF spillage and contamination in operational procedures and ensure adequate controls are in place. • Undertake actions identified in the RTBS HSEC risk register review process and action management system. • Ensure that AFFF spills of any volume including near misses are reported and corrective actions assigned to prevent the spill or to ensure that similar spills do not occur in the future. • Ensure that location of AFFF releases are recorded and documented as an environmental incident.
Environmental Advisors	• Ensure that advice is provided to work areas where required regarding the management of AFFF products. • Provide assistance regarding AFFF spill response. • Ensure that actions are taken to identify an alternative product which meets DEHP requirements by 2019.
Health & Safety Advisors	• Ensure that advice is provided to work areas where required regarding the handling of AFFF products. • Provide H&S advice for any work involving AFFF products.
All Employees and Contractors	• Manage AFFF products in accordance with this Management Plan. • Adhere to SDS, work procedures and all requirements of the Management Plan in regards to AFFF.

4 Procurement

RT Weipa may currently continue to procure the following banned AFFF products for use on site until such time that an alternative product is implemented (before 2019):

- CHUBB AFFF 6%
- CHUBB AFFF 3%

Information will be distributed to site prior to the complete phase out of the banned products which is intended to be before 2019.

The following product has been removed from ChemAlert and can no longer be procured or used on site:

- 3M FC-203CE LIGHT WATER AFFF FIRE FIGHTING FOAM 3%CONCENTRATE

Any new fire fighting products will require assessment in accordance with the site chemical acceptance process.

Any work areas using an alternative fire fighting foam products should obtain advice from the Environmental Operations Team or the Advisor – Industrial Hygiene.

5 Transport

The following requirements apply to the transport of AFFF products on site at RT Weipa to prevent the risk of spillage:

- Transporting in small volumes,
- securing containers during transport on site,
- Engaging RTP or CHUBB to deliver any larger volumes of new AFFF products.

Used waste AFFF and materials contaminated with AFFF are considered to be a Regulated Waste under Environmental Legislation. This means that the transport of these must be carried out by a licenced regulated waste transport. For RT Weipa Operations this is currently REMONDIS.

6 Storage

The following provisions must be implemented in all AFFF storage locations:

- AFFF products must be stored in an impermeable bund.
- Products must be clearly labelled.
- Ensure that the SDS is followed for segregation requirements.
- Waste AFFF product should not be stored for long periods of time. This should be disposed of in accordance with the disposal section of this plan.

7 Handling

When handling AFFF products and there is a risk of spillage or splash, all PPE requirements as detailed on the SDS must be followed.

During activities such as decant a JSEA must be developed and followed to prevent the risk of spillages and exposure to the products.

Change out of AFFF from HME must be completed in accordance with the CHUBB Standard Work Instruction which can be obtained from CHUBB on request.

8 Incident Management

8.1 Spill Response

Appropriate spill response equipment must and available for all areas that store or handle AFFF products. This is to ensure releases are promptly controlled, contained and remediated where safe to do so.

In the event of a spill of AFFF the following steps have been developed to provide guidance in accordance with the site Environmental Hazardous Material Standard (CLASSIC-ENV-STD-814).

8.1.1 Safety First

In the event of a spill, the first obligations for RT employees is to protect the health and safety of themselves and others in the area that may be at risk, this is followed by an obligations to minimise environmental harm.

Before immediately attempting to control or contain a spill assesses potential risks involve at the spill site. This may be done by stopping and working through a Take 5 or JESA. Considerations should be given to the SDS of the AFFF products with regards to appropriate PPE required for clean-up activities.

8.1.2 Identify and Contain

If safe to do so, assess the potentially impacted areas for example:

- is this location a sensitive environment
  - water way
  - buffer areas
  - cultural site
- Is the spill likely to spread
  - is the area sealed hardstand or unsealed earth.
  - Is the impacted area bunded?
  - Is the spill in a drain or channel
- How much has been spilt.
  - Consider the size of the container of reservoir of the spilt substance (is it a 20L container or HME suppression tank)

Attempt to contain the spill with an appropriate containment device

- Isolate the spill source (turn off valve, move container etc.)
- Use spill kits and absorbent materials for liquid containment or booms on water.
- Use machines to create bunds or physical barriers to prevent spread.
- Confirm bund drain valves are closed.

Do you need help with the clean-up?

If the spill is too large to deal with yourself or if speciality advice is required for containment control and clean-up call fire and rescue #8444 or 4069 8444.

In the event of a significant spill, or a spill near a waterway, a member of the Environmental Operations Team should be contacted immediately to provide advice regarding the clean-up actions.

8.1.3 Clean-up the Spill

It is import to recover as much AFFF material as possible to minimise further contamination.

- Collect the spilt AFFF, pump or shovel into a container or vacuum up (whichever is appropriate).
- Collect any surrounding contamination, shovel up, excavate out impacted soils, dirt, syphon contaminated water.

The requirement will be dependent on the spill location and type

- Spill to land
- Spill to water or marine area
- Spill in bund or workshops

Please contact the Environmental Operations Team for advice.

8.1.4 Disposal

Please see Disposal section of this Plan for management of contaminated materials such as water and soil.

8.2 Incident Recording

All spillages of AFFF, including the activation of fire suppression systems on HME must be recorded as an incident on the Rio Tinto Prospect Portal in accordance with *CLASSIC-SYS-STD-618-Non-conformance, Incident and Action Management Standard.* In addition to any other areas of impact these incidents must be recorded as an **Environmental Impact.**

The location of all AFFF spillages and release via HME suppression systems must be recorded within the incident description.

GPS Coordinates of the release location need to be recorded. This will ensure that a register of release locations can be developed to ensure that appropriate environmental assessments can be carried out immediately or as part of mine site closure.

9 Disposal

Disposal of waste AFFF or products contaminated by AFFF such as soil, absorbent clean-up products and water require high temperature waste incineration. REMONDIS have identified an appropriate party to receive the waste foam product. All work areas are required to place a Waste Management Request form with REMONDIS for the collection and disposal of waste foam. The Waste Management Request form can be located on the intranet home page.

10 References and Related Documents

Name	Location
Operational Policy – Environmental Management of Fire Fighting Foam	http://www.ehp.qld.gov.au/assets/documents/regulation/firefighting-foam-policy.pdf
Environmental Management of Fire fighting Foam Policy – Explanatory Notes	http://www.ehp.qld.gov.au/assets/documents/regulation/firefighting-foam-policy-notes.pdf
CLASSIC-SYS-STD-618-Non-conformance, Incident and Action Management Standard.	CLASSIC HSEC Management System Library
Waste Management Request Form, REMONDIS	http://calweipaproxy/intranet/default.asp
CLASSIC-ENV-STD-814 Environmental Hazardous Material Standard.	CLASSIC HSEC Management System Library

11 Document Risk Management

Risk Ranking	HSE Risk Register Scenario ID (e.g.)	Risk Assessment Date	Document Review Schedule

12 Document Revision and Approval History

Rev.	Date	Revision Description	Author	Reviewed	Approved
1.0	30/06/2017	AFFF Management Plan Created	S. Walker	J. Smith	T. Ryan

Rio Tinto

Bauxite & Alumina

Weipa Green Banner

Environment and Communities Events and Information

Distribution List: RT Weipa All Personnel and RT Weipa All Contractors

Subject: Ban of AFFF Fire Fighting Foams **Date:** 30/06/2017

In July 2016, the Queensland Department of Environment and Heritage Protection (EHP) introduced a policy to ban the use of AFFF firefighting foams containing fluorinated organic compounds, also known as PFAS (Per- and poly-fluoroalkyl substances) specifically:

- PFOS (perfluoro-octane sulfonate),
- PFOA (perfluorooctanoic acid), and
- PFHxS (Perfluorohexane sulfonate) (less common).

Products containing these compounds present a significant risk due to their persistence in the environment, bioaccumulation and toxicity. The policy requires that all fire fighting foams containing these compounds at specified concentrations must be phased out by 2019 at the latest. This requires any existing stocks of particular foams to be withdrawn from service by this date.

RT Weipa has identified in consultation with CHUBB that their products currently used on site (CHUBB 3% and CHUBB 6%) do not meet the concentrations specified by EHP and are therefore required to be phased out by 2019.

RT Weipa Environmental Operations Team will work closely with RTP to ensure that an appropriate product is sourced and in place as soon as possible.

In the meantime, management of the AFFF products on site must be in accordance with the developed AFFF Management Plan (attached). Of particular importance:

- SDS should be available for all employees.
- PPE requirements must be adhered to.
- All new AFFF concentrates must be stored in an impermeable bund.
- All spillages or release of fire fighting foams, including release from HME, must be recorded in RTBS as an environmental incident and the location of the spill (GPS coordinates) must be recorded. For large spillages the Environmental Operations Team and Fire and Rescue should be contacted for assistance.
- All waste AFFF, from HME change outs etc. must be stored in appropriately labelled containers and within an impermeable bund.
- REMONDIS should be contacted for collection and disposal of the waste AFFF products as this is a regulated waste and requires high temperature incineration.

Required Actions	Accountable
1. Crew Leaders and Managers to ensure that all employees are aware of the risks associated with the product.	Leaders
2. Crew Leaders and Managers to communicate requirements of the attached Management Plan to all employees.	

For more information on this banner contact Shalika Walker, Environmental Operations Team on *4069 8404.*

"If it's not safe, don't do it that way!"

GOLDER

Table 1 - Summary of PFAS Laboratory Results of AFFF Concentrate Standard and TOPA method

Project Number 18100235

			PFAS																															
			Perfluorobutanesulfonic acid (PFBS)	Perfluoroheptane sulfonic acid (PFPeS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoro-n-pentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoate (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnA)	Perfluorododecanoic acid (PFDoA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctanesulfonamide (PFOSA)	N-Me-FOSA	N-Et-FOSA	N-Me-FOSE	N-Et-FOSE	N-methyl-perfluorooctanesulfonamidoacetic acid (MeFOSAA)	N-ethyl-perfluorooctanesulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid	Sum of PFAS
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample_ID	**Sampled_Date_Time**	**Batch**																																	
CHUBB - AFFF	19/10/2017	EB1721789	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	0.04	0.54	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	0.18	13.1	0.3	<0.05	14.16
CHUBB - AFFF TOPA	19/10/2017	EB1721789	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	986	1730	1320	130	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<25.0	<10.0	<25.0	<25.0	<25.0	<25.0	<25.0	<10.0	<10.0	<10.0	198	<10.0	<10.0	4364			

ANALYTICAL REPORT

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Jon Dicker	Manager	Adam Atkinson
Client	SGS ENVIRONMENTAL CAIRNS	Laboratory	SGS Melbourne EH&S
Address	2/58 Comport Street Portsmith QLD 4870	Address	10/585 Blackburn Road Notting Hill Victoria 3168
Telephone	07 4035 5111	Telephone	+61395743200
Facsimile	07 40355122	Facsimile	+61395743399
Email	jon.dicker@sgs.com	Email	Au.SampleReceipt.Melbourne@sgs.com
Project	**CE126465**	SGS Reference	**ME302298 R0**
Order Number	**CE126465**	Date Received	24 Mar 2017
Samples	1	Date Reported	07 Apr 2017

COMMENTS

Whilst SGS laboratories conform to ISO:17025 standards, results of analysis in this report fall outside of the current scope of NATA accreditation .

SIGNATORIES

Michael Jeddou
VOC Supervisor

			Sample Number	ME302298.001
			Sample Matrix	Other
			Sample Date	21 Mar 2017
			Sample Name	AND/FOAM
Parameter	Units	LOR		
Perfluoronated Surfactants in Product	**Method: MA_1523**	**Tested: 28/3/2017**		
10:2 Fluorotelomersulphonate	mg/kg	0.5	<0.5	
4-2 Fluorotelomersulphonate	mg/kg	0.5	<0.5	
6-2 Fluorotelomer Sulfonate	mg/kg	0.5	**3.0**	
8:2 Fluorotelomersulphonate	mg/kg	0.5	<0.5	
N-Ethyl-heptadecafluorooctane sulphonamide	mg/kg	0.5	<0.5	
N-Ethyl-heptadecafluorooctane sulphonamidoethanol	mg/kg	0.5	<0.5	
N-Methyl-heptadecafluorooctane sulphonamide	mg/kg	0.5	<0.5	
N-Methyl-heptadecafluorooctane sulphonamidoethanol	mg/kg	0.5	<0.5	
Perfluorononanoic acid	mg/kg	0.5	<0.5	
Perfluorooctane sulfonate	mg/kg	0.5	<0.5	
Perfluorooctanesulfonamidoacetic Acid	mg/kg	0.5	<0.5	
Perfluorooctanoic Acid	mg/kg	0.5	<0.5	
Perfluorobutanoic acid	mg/kg	0.5	<0.5	
Perfluorobutane sulfonate	mg/kg	0.5	<0.5	
Perfluorodecanoic acid	mg/kg	0.5	<0.5	
Perfluorodecane sulfonate	mg/kg	0.5	<0.5	
Perfluoro-1-dodecanesulfonate	mg/kg	0.5	<0.5	
Perfluorodecylphosphonic acid	mg/kg	0.5	<0.5	
Perfluorododecanoic acid	mg/kg	0.5	<0.5	
Perfluoro-1-heptanesulfonate	mg/kg	0.5	<0.5	
Perfluoro-1-nonanesulfonate	mg/kg	0.5	<0.5	
Perfluoroheptanoic acid	mg/kg	0.5	<0.5	
Perfluorohexanoic acid	mg/kg	0.5	<0.5	
Perfluoro-n-hexadecanoic acid	mg/kg	0.5	<0.5	
Perfluorohexane sulfonate	mg/kg	0.5	<0.5	
Perfluorohexylphosphonic acid	mg/kg	0.5	<0.5	
Perfluorooctadecanoic Acid	mg/kg	0.5	<0.5	
Perfluorooctylphosphonic acid	mg/kg	0.5	<0.5	
Perfluoroctane sulfonamide	mg/kg	0.5	<0.5	
Perfluoropentanoic acid	mg/kg	0.5	<0.5	
Perfluorotetradecanoic acid	mg/kg	0.5	<0.5	
Perfluorotridecanoic acid	mg/kg	0.5	<0.5	
Perfluoroundecanoic acid	mg/kg	0.5	<0.5	

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Perfluoronated Surfactants in Product **Method: MA_1523**

Parameter	QC Reference	Units	LOR	DUP %RPD	MS %Recovery	MSD %RPD
10:2 Fluorotelomersulphonate	LB012401	mg/kg	0.5	0%	NA	NA
4-2 Fluorotelomersulphonate	LB012401	mg/kg	0.5	0%	NA	NA
6-2 Fluorotelomer Sulfonate	LB012401	mg/kg	0.5	16%	NA	NA
8:2 Fluorotelomersulphonate	LB012401	mg/kg	0.5	0%	NA	NA
N-Ethyl-heptadecafluorooctane sulphonamide	LB012401	mg/kg	0.5	0%	NA	NA
N-Ethyl-heptadecafluorooctane sulphonamidoethanol	LB012401	mg/kg	0.5	0%	NA	NA
N-Methyl-heptadecafluorooctane sulphonamide	LB012401	mg/kg	0.5	0%	NA	NA
N-Methyl-heptadecafluorooctane sulphonamidoethanol	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorononanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorooctane sulfonate	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorooctanesulfonamidoacetic Acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorooctanoic Acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorobutanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorobutane sulfonate	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorodecanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorodecane sulfonate	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoro-1-dodecanesulfonate	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorodecylphosphonic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorododecanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoro-1-heptanesulfonate	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoro-1-nonanesulfonate	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoroheptanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorohexanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoro-n-hexadecanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorohexane sulfonate	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorohexylphosphonic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorooctadecanoic Acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorooctylphosphonic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoroctane sulfonamide	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoropentanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorotetradecanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluorotridecanoic acid	LB012401	mg/kg	0.5	0%	NA	NA
Perfluoroundecanoic acid	LB012401	mg/kg	0.5	0%	NA	NA

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
LOR	Limit of Reporting
↑↓	Raised or Lowered Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
-	The sample was not analysed for this analyte
NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

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APPENDIX D

Summary Table of PFAS Laboratory Results of AFFF Concentrate

APPENDIX E

Field Records

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Field Monitoring Data

Project Number 18100235

Sample Type	Location	Date Sampled	Dissolved Oxygen (mg/L)	Temperature (°C)	pH	Conductivity (µS/cm)	Redox Potential (mV)	Turbidity (ntu)	Top of casing (m AHD)	Depth to water (m below top of casing)	Groundwate Level (m AHD)	Comments
Groundwater Monitoring Well	LPI-MW-08	9/06/2018	5.07	30	4.8	90.9	234.1	-	8.94	7.266	1.674	
Groundwater Monitoring Well	LPI-MW-20	9/06/2018	2.19	29.2	37.7	5.21	216.3	-	8.43	6.473	1.957	
Groundwater Monitoring Well	LPI-MW-21	9/06/2018	3.37	29.4	5.62	87.1	197.6	-	8.67	6.806	1.864	
Groundwater Monitoring Well	LPI-MW-22	9/06/2018	2.37	29.8	4.92	63.7	206.4	-	8.68	6.84	1.84	
Groundwater Monitoring Well	ASB-MW-07	8/06/2018	2.84	29	4.81	187	197	-	17.68	12.663	5.017	
Groundwater Monitoring Well	ASB-MW-08	8/06/2018	4.46	29.6	4.87	130.1	191.4	-	17.06	12.055	5.005	
Groundwater Monitoring Well	ASB-MW-10	7/06/2018	2.68	29.8	4.74	119.8	129.2	-	16.94	12.034	4.906	
Groundwater Monitoring Well	ASB-MW-16	7/06/2018	3.22	29.9	113.75	175.3	72.7	-	17.38	12.528	4.852	
Groundwater Monitoring Well	ASB-MW-21	7/06/2018	2.52	29.6	4.33	95.4	231	-	13.32	8.725	4.595	
Groundwater Monitoring Well	ASB-MW-23	8/06/2018	4.6	28.6	4.56	105.7	224.3	-	12.53	7.395	5.135	
Groundwater Monitoring Well	EWHEQ-MW-01	6/06/2018	4.04	28.7	4.45	20.1	166.5	-	19.55	4.052	15.498	
Groundwater Monitoring Well	EWHEQ-MW-02	6/06/2018	5.44	29.4	4.79	20.2	158.2	-	19.57	4.311	15.259	
Groundwater Monitoring Well	EWHEQ-MW-03	6/06/2018	5.09	29	4.51	18	178.9	-	20.63	5.303	15.327	
Groundwater Monitoring Well	EWHEQ-MW-04	6/06/2018	3.49	28.9	4.24	18.6	194.7	-	18.91	3.63	15.28	
Groundwater Monitoring Well	EWHEQ-MW-05	8/06/2018	2.72	28.7	4.46	22	214	-	18.1	3.021	15.079	
Groundwater Monitoring Well	AHEQ-MW-01	6/06/2018	4.37	31.3	6.46	382.1	-2.8	-	15.585	10.575	5.01	
Groundwater Monitoring Well	AHEQ-MW-02	6/06/2018	4.05	29.1	4.9	169.1	128.9	-	15.197	10.393	4.804	
Groundwater Monitoring Well	AHEQ-MW-03	6/06/2018	3.51	29.3	4.73	193.1	228.3	-	14.401	9.68	4.721	
Groundwater Monitoring Well	AHEQ-MW-05	6/06/2018	3.01	30.5	4.9	296.1	220.7	-	11.342	6.983	4.359	
Groundwater Monitoring Well	AHEQ-MW-06	6/06/2018	5.59	28.4	4.92	108.8	182.7	-	11.509	6.866	4.643	
Groundwater Monitoring Well	AFD-MW-22	6/06/2018	7.11	29.4	5.69	39.6	163.1	-	19.93	7.634	12.296	
Groundwater Monitoring Well	AFD-MW-36	6/06/2018	8.51	29.8	4.73	34.1	239.6	-	19.83	7.577	12.253	
Groundwater Monitoring Well	AFD-MW-21	6/06/2018	7.56	29.1	6.21	45.2	197	-	20	Not Measured	N/A	Intrinsicly safe equipment only inside fuel farm depot
Groundwater Monitoring Well	RWW-MW-01	5/06/2018	4.77	29.1	4.38	60.1	196.8	-	8.53	5.985	2.545	
Groundwater Monitoring Well	RWW-MW-02	6/06/2018	4.04	29	4.92	64.9	217.7	-	9.43	6.839	2.591	
Groundwater Monitoring Well	RWW-MW-03	5/06/2018	2.84	29.1	5.02	64.9	131.8	-	8.09	5.42	2.67	
Groundwater Monitoring Well	RWW-MW-04	5/06/2018	2.96	29.2	5.09	78.2	122	-	8.11	5.508	2.602	Well requires surveying following damage to well.
Groundwater Monitoring Well	RWW-MW-05	5/06/2018	5.59	29.4	4.94	73	203.4	-	8.6	5.945	2.655	
Groundwater Monitoring Well	HOS-SA/2	5/06/2018	3.71	29.3	4.89	32.8	162.9	-	10.83	Obstructed	N/A	Well obstructed, inferred root growth
Groundwater Monitoring Well	HOS-SA/4	5/06/2018	2.9	29.5	4.65	24.3	179.3	-	11.43	8.595	2.835	
Groundwater Monitoring Well	HOS-SA/249	5/06/2018	4.68	28.7	4.43	30.3	221.9	-	11.41	9.121	2.289	
Groundwater Monitoring Well	HOS-SA/254	5/06/2018	4.01	30	4.59	27.4	139.2	-	11.24	7.155	4.085	
Groundwater Monitoring Well	ELN-MW-02	4/06/2018	3.28	30.1	5.19	75.8	135.1	-	6.6	5.654	0.946	
Groundwater Monitoring Well	ELN-MW-04	4/06/2018	3.13	29.7	4.9	59	130.5	-	9.52	8.525	0.995	
Groundwater Monitoring Well	ELN-MW-06	4/06/2018	1.77	29.9	4.75	82.6	128.3	-	7.32	6.42	0.9	
Groundwater Monitoring Well	ELN-MW-07	4/06/2018	4.34	30	5.43	98.3	19.5	-	7.52	6.708	0.812	
Groundwater Monitoring Well	ELN-MW-30	4/06/2018	2.38	29.9	4.46	60.9	106.9	-	10.24	8.069	2.171	
Groundwater Monitoring Well	LPD-MW-10	3/06/2018	2.69	29.4	4.29	66.5	221.5	-	10.06	8.755	1.305	
Groundwater Monitoring Well	LPD-MW-13	3/06/2018	5.91	30	5.35	48.8	201.9	-	9.44	8.234	1.206	
Groundwater Monitoring Well	LPD-MW-34	3/06/2018	3.75	29.3	5.29	52.6	185.6	-	8.93	8.777	0.153	
Groundwater Monitoring Well	BRP-MW-01	3/06/2018	2.1	28.9	5.98	123.7	191.2	-	8.14	7.195	0.945	
Groundwater Monitoring Well	BRP-MW-02	3/06/2018	1.77	28.7	5.59	124.3	166.4	-	9.61	7.248	2.362	
Groundwater Monitoring Well	BRP-MW-03	3/06/2018	3.03	28.9	6.03	104.3	145.7	-	9.75	5.4	4.35	
Groundwater Monitoring Well	ELS-RW-01	2/06/2018	3.43	30.6	4.74	139.6	178.6	-	4.172	3.566	0.606	
Groundwater Monitoring Well	ELS-MW-18	2/06/2018	2.4	30.1	4.64	83.9	169	-	7.029	6.322	0.707	
Groundwater Monitoring Well	ELS-MW-19	2/06/2018	1.26	30.7	5.97	238.5	-87.2	-	4.795	4.19	0.605	HC odour - faint
Groundwater Monitoring Well	ELS-MW-20	2/06/2018	2.06	29.7	5.26	175.3	29	-	6.941	6.338	0.603	

GOLDER

Field Monitoring Data

Project Number 18100235

Sample Type	Location	Date Sampled	Dissolved Oxygen (mg/L)	Temperature (°C)	pH	Conductivity (µS/cm)	Redox Potential (mV)	Turbidity (ntu)	Top of casing (m AHD)	Depth to water (m below top of casing)	Groundwate Level (m AHD)	Comments
Groundwater Monitoring Well	ELS-MW-23	2/06/2018	1.33	31	5.8	719	34	-	1.897	1.286	0.611	
Groundwater Monitoring Well	ELS-MW-24	2/06/2018	2.25	31.1	6.01	13566	19.7	-	1.939	1.475	0.464	
Surface Water	PR/EWM/WP	25/04/2018	1.47	29.81	5.56	85	-	183	-	-	-	Next to wash pad oil water separator discharge point
Surface Water	SW/BEN/UPS	24/04/2018	7.88	29.96	5.44	17	-	0	-	-	-	Moderate flow 0.7m deep, 1-2m wide
Surface Water	SW/BEN/DOS	24/04/2018	5.99	29.9	5.9	126	-	0	-	-	-	Tidally influenced flowing out, 10m wide, 0.8 m deep
Surface Water	SW/TRC/UPS	24/04/2018	3.97	30.53	5.23	18	-	0	-	-	-	Low to moderate clear flow, 04 m deep,
Surface Water	SW/TRC/DOS	24/04/2018	5.27	30.89	6.1	33	-	0	-	-	-	Low few, 0.3 m deep, 10m wide
Surface Water	LAKE/MCL	24/04/2018	5.35	32.43	6.63	50	-	0.4	-	-	-	Lake full
Surface Water	LAKE/PAT	24/04/2018	6.65	31.8	6.69	56	-	0	-	-	-	Lake very full
Surface Water	SW/PAP/UPS	24/04/2018	6.2	29.78	5.98	15	-	0	-	-	-	Moderate flow, 0.5 m deep, 2-3m wide
Surface Water	SW/PAP/DOS	24/04/2018	4.63	293	5.54	38	-	0	-	-	-	Low flow clear, 0.3 m deep, 20-30m wide
Surface Water	SW/MAR/UPS	24/04/2018	7.84	27.82	6.84	25	-	1.2	-	-	-	Flowing clear
Surface Water	SW/MAR/DOS	24/04/2018	7.17	27.65	6.78	25	-	3	-	-	-	Flowing clear
Surface Water	PR/AND/HEQW	23/04/2018	3.52	27	7.86	1900	-	59	-	-	-	0.3 m of water
Surface Water	PR/AND/WS	23/04/2018	2.16	33.55	7.7	899	-	402	-	-	-	Red colour high turbidity
Surface Water	SP/TDC/UPS	23/04/2018	4.41	29.9	7.91	61	-	0	-	-	-	Flowing clear
Surface Water	SP/BOT	23/04/2018	2.67	31	7.85	280	-	0	-	-	-	Swamp
Surface Water	SP/AND/SLTS	23/04/2018	5.78	28	7.86	520	-	3	-	-	-	Swamp
Surface Water	SP/ELY/MS3	23/04/2018	3.85	31.62	7.56	15	-	0	-	-	-	Flowing clear
Surface Water	MRC/UPS	24/04/2018	2.6	30.97	5.22	21	-	0.2	-	-	-	Swampy vegetation low slow flow depth 0.1m
Surface Water	MRC/DOS	24/04/2018	6.99	27.99	6	17	-	0	-	-	-	Creek flowing moderately. 0.4 m deep. 4 to 7 m wide
Surface Water	PR/EWM/WP/DOS	25/04/2018	3.51	34.5	5.82	119	-	>1000	-	-	-	Stagnant
Surface Water	PR/AND/WS/DOS	23/04/2018	0.99	30.72	7.66	530	-	50.3	-	-	-	Shallow low flow
Surface Water	Sw/LUT/UPS	23/04/2018	4.67	31.5	7.78	24	-	1.8	-	-	-	Flowing clear
Surface Water	SP/ELY/MS1	23/04/2018	4.6	31.77	7.7	21	-	0	-	-	-	Flowing clear
Surface Water	PR/AND/DOS	23/04/2018	2.86	32	7.68	11800	-	13	-	-	-	Estuarine creek
Potable Well	SA091	25/04/2018	4.05	27.78	5.57	77	-	0	-	-	-	
Potable Well	SA093	25/04/2018	4.55	2958	5.54	78	-	0	-	-	-	
Potable Well	SA026	25/04/2018	7.96	29.49	5.3	23	-	3.1	-	-	-	
Potable Well	SA009	25/04/2018	0.46	30.75	0.91	21	-	0	-	-	-	
Potable Well	SA027	25/04/2018	7.5	30.99	5.08	18	-	0	-	-	-	
Potable Well	SA351	25/04/2018	6.23	30.12	5.35	78	-	0	-	-	-	
Potable Well	SA107	25/04/2018	4.04	0.5	5.25	30	-	0	-	-	-	
Potable Well	SA349	25/04/2018	433	29.88	5.9	30	-	0	-	-	-	
Potable Well	SA038	25/04/2018	4.5	30.52	5.6	39	-	0	-	-	-	
Potable Well	SA041	25/04/2018	3.95	30.34	4.83	46	-	0	-	-	-	
Potable Well	SA037	25/04/2018	6.15	32.17	5.28	49	-	0	-	-	-	
Potable Well	SA036	25/04/2018	5.79	54	5.25	54	-	0	-	-	-	
Potable Well	SA39	25/04/2018	7.47	30.73	5.03	74	-	0	-	-	-	
Potable Well	SA350	25/04/2018	7.97	28.46	6.3	32	-	0	-	-	-	
Potable Well	SA110	25/04/2018	5.2	30.69	5.29	87	-	0	-	-	-	
Potable Well	SA017	25/04/2018	7.31	31.44	5.07	88	-	0	-	-	-	
Potable Well	SA020	25/04/2018	3.53	30.94	5.36	73	-	0	-	-	-	
Potable Well	SA013	25/04/2018	7.61	31.97	5.64	77	-	0	-	-	-	
Potable Well	SA012	25/04/2018	7.48	32.17	5.1	93	-	0	-	-	-	
Potable Well	SA015	25/04/2018	7.57	31	5.4	64	-	0	-	-	-	
Potable Well	SA014	25/04/2018	4.16	31.13	5.21	76	-	0	-	-	-	

GOLDER

Field Monitoring Data

Project Number 18100235

Sample Type	Location	Date Sampled	Dissolved Oxygen (mg/L)	Temperature (°C)	pH	Conductivity (µS/cm)	Redox Potential (mV)	Turbidity (ntu)	Top of casing (m AHD)	Depth to water (m below top of casing)	Groundwate Level (m AHD)	Comments
Accumulation Point	TWD	26/04/2018	6	28.9	6.71	52	-	1.9	-	-	-	
Accumulation Point	LPTA	25/04/2018	4.46	30.83	5.37	78	-	0	-	-	-	
Accumulation Point	APT	25/04/2018	7.08	30.07	5.63	75	-	0	-	-	-	
Groundwater Monitoring Well	LPI-MW-01	5/07/2018	5.64	29.3	4.93	92.3	-	65.2	7.83	6.964		
Groundwater Monitoring Well	LPI-MW-04	5/07/2018	4.08	29.6	5.5	131.2	-	8.8	8.64	7.9		
Groundwater Monitoring Well	LPI-MW-05	5/07/2018	2.51	30	5.04	87.6	-	168.6	8.88	8.36		
Groundwater Monitoring Well	LPI-MW-07	5/07/2018	3.92	30.1	5.73	164.8	-	150	7.85	6.575		
Groundwater Monitoring Well	LPI-MW-08	5/07/2018	5.02	30.1	4.66	91.8	-	31	8.94	7.73		
Groundwater Monitoring Well	LPI-MW-11	3/07/2018	2.35	28.6	4.68	103.9	-	209	6.13	5.1		
Groundwater Monitoring Well	LPI-MW-12	3/07/2018	2.55	29.1	5.08	96.8	-	80.8	5.64	4.2		
Groundwater Monitoring Well	LPI-MW-13	3/07/2018	6.25	30.7	5.18	66.4	-	87.5	7.84	7.062		
Groundwater Monitoring Well	LPI-MW-15	4/07/2018	2.15	30.9	5.13	75.7	-	165	8.07	7.299		
Groundwater Monitoring Well	LPI-MW-16	5/07/2018	3.95	29.3	4.96	91.6	-	15.6	8.14	7.064		
Groundwater Monitoring Well	LPI-MW-17	4/07/2018	1.92	30.5	4.23	72.5	-	22.7	8.21	7.41		
Groundwater Monitoring Well	LPI-MW-18	5/07/2018	4.42	30	4.85	64.3	-	407	8.11	6.83		
Groundwater Monitoring Well	LPI-MW-19	3/07/2018	6.55	29.9	4.91	69.2	-	575.3	11.13	8.516		
Groundwater Monitoring Well	LPI-MW-20	5/07/2018	2.92	29.2	4.91	55.9	-	32.3	8.43	6.975		
Groundwater Monitoring Well	LPI-MW-21	5/07/2018	3.29	29.8	5.42	89.8	-	104.3	8.67	7.293		
Groundwater Monitoring Well	LPI-MW-22	5/07/2018	3.49	29.6	5.06	63.6	-	39.7	8.68	7.31		
Groundwater Monitoring Well	LPI-MW-24	4/07/2018	5.82	29.8	5.16	100.5	-	750.9	10.2	7.614		
Surface Water	PR/AND/DOS	4/07/2018	5.99	24.1	6.71	44.793	-	9.5	-	-	-	
Surface Water	EMB/EV/NSA	4/07/2018	6.63	24.1	7.73	52.184	-	3.4	-	-	-	
Surface Water	EMB/EV/NSB	4/07/2018	7.01	24.1	7.76	51296	-	80.8	-	-	-	
Surface Water	EMB/EV/NSC	4/07/2018	7.02	24	7.77	51410	-	27.6	-	-	-	
Surface Water	EMB/LP/NSA	4/07/2018	6.84	23.2	7.67	51029	-	29.7	-	-	-	
Surface Water	EMB/LP/NSB	4/07/2018	6.16	23.8	7.67	516.11	-	97.3	-	-	-	
Surface Water	EMB/LP/NSC	4/07/2018	6.49	24.6	7.87	52255	-	2.8	-	-	-	
Surface Water	MRC/DOS	4/07/2018	8.17	24.1	8.6	180.7	-	0.9	-	-	-	
Surface Water	SW/BEN/DOS	4/07/2018	6.67	23.4	7.02	98.6	-	0	-	-	-	
Surface Water	PR/EWM/WP/DOS	4/07/2018	0.96	26.2	4.46	381	-	65.4	-	-	-	
Potable Well	SA012	5/07/2018	5.11	29	5.03	97.8	-	1.6	-	-	-	
Potable Well	SA013	3/07/2018	5.67	72.3	5.71	85.2	-	9	-	-	-	
Potable Well	SA014	2/07/2018	6.26	28.8	5	81.8	-	5.2	-	-	-	
Potable Well	SA015	3/07/2018	6.77	27.7	5.24	73.2	-	0.9	-	-	-	
Potable Well	SA017	2/07/2018	4.3	28.7	5.28	111.1	-	0	-	-	-	
Potable Well	SA020	2/07/2018	4.54	28.5	5.37	82.6	-	0.1	-	-	-	
Accumulation Point	LPTA	2/07/2018	6.14	28.9	4.95	-	-	7	-	-	-	

REPORT OF TEST PIT: AP-TP01

CLIENT:	Rio Tinto Weipa	COORDS: 600921.0 m E 8597817.0 m N MGA94 54	SHEET: 1 OF 1
PROJECT:	PFAS Contamination Assessment	SURFACE RL: DATUM: AHD	MACHINE: 423E CAT Backhoe
LOCATION:	Weipa Airport	PIT DEPTH: 1.00 m	CONTRACTOR: Carpentaria Contracting
JOB NO:	1780457	BUCKET TYPE: 400mm	LOGGED: ERC DATE: 18/10/17
			CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low to medium plasticity, red brown	D	F	
					DS 0.10-0.20 m Rec = 100/100 mm R = 0A							
			0.5									
				0.80								
					DS 0.80-1.00 m Rec = 200/200 mm R = 0A			GM	Silty GRAVEL fine to medium grained, rounded, red brown		MD	Banxite
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP02

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Weipa Airport
JOB NO: 1780457

COORDS: 600890.0 m E 8597824.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low to medium plasticity, red brown	D	F	
					DS 0.10-0.20 m Rec = 100/100 mm R = 0A							
			0.5									
				0.80								
					DS 0.80-1.00 m Rec = 200/200 mm R = 0A			GM	Silty GRAVEL medium grained, rounded, low plasticity, red brown		MD	Banxite
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP03

CLIENT:	Rio Tinto Weipa	COORDS: 600924.0 m E 8597858.0 m N MGA94 54	SHEET: 1 OF 1
PROJECT:	PFAS Contamination Assessment	SURFACE RL: DATUM: AHD	MACHINE: 423E CAT Backhoe
LOCATION:	Weipa Airport	PIT DEPTH: 1.00 m	CONTRACTOR: Carpentaria Contracting
JOB NO:	1780457	BUCKET TYPE: 400mm	LOGGED: ERC DATE: 18/10/17
			CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low to medium plasticity, red brown	D	F	Banxite
				0.40	DS 0.10-0.20 m Rec = 100/100 mm R = 0A			GM	Silty GRAVEL medium to coarse grained, rounded, low plasticity, red brown		MD	
			0.5		DS 0.80-1.00 m Rec = 200/200 mm R = 0A							
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP04

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Weipa Airport
JOB NO: 1780457

COORDS: 599394.0 m E 8598852.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low to medium plasticity, brown	D	F	
			0.5		DS 0.10-0.20 m Rec = 100/100 mm R = 0A							
				0.60					red brown		MD	
					DS 0.80-1.00 m Rec = 200/200 mm R = 0A							
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP05

CLIENT:	Rio Tinto Weipa	COORDS: 599427.0 m E 8598898.0 m N MGA94 54	SHEET: 1 OF 1
PROJECT:	PFAS Contamination Assessment	SURFACE RL: DATUM: AHD	MACHINE: 423E CAT Backhoe
LOCATION:	Weipa Airport	PIT DEPTH: 1.00 m	CONTRACTOR: Carpentaria Contracting
JOB NO:	1780457	BUCKET TYPE: 400mm	LOGGED: ERC DATE: 18/10/17
			CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0		DS 0.10-0.10 m Rec = 100/0 mm R = 0A			CL	Silty CLAY low to medium plasticity, brown	D	F	
			0.5	*0.50*	DS 0.80-0.20 m Rec = 0/-600 mm R = 0A			GM	Silty GRAVEL fine to medium grained, rounded, red brown		MD	Bauxite
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP06

CLIENT:	Rio Tinto Weipa	COORDS: 599395.0 m E 8598890.0 m N MGA94 54	SHEET: 1 OF 1
PROJECT:	PFAS Contamination Assessment	SURFACE RL: DATUM: AHD	MACHINE: 423E CAT Backhoe
LOCATION:	Weipa Airport	PIT DEPTH: 1.00 m	CONTRACTOR: Carpentaria Contracting
JOB NO:	1780457	BUCKET TYPE: 400mm	LOGGED: ERC DATE: 18/10/17
			CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0		DS 0.10-0.20 m Rec = 100/100 mm R = 0A			CL	Silty CLAY low to medium plasticity, brown			
			0.5	*0.50*	DS 0.80-1.00 m Rec = 200/200 mm R = 0A				red brown	D	F	
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP07

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Weipa Airport
JOB NO: 1780457

COORDS: 600166.0 m E 8598212.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low plasticity, brown	D	F	
					DS 0.10-0.20 m Rec = 100/100 mm R = 0A							
			0.5									
				0.80								
					DS 0.80-1.00 m Rec = 200/200 mm R = 0A			GM	Silty GRAVEL medium to coarse grained, rounded, red brown		MD	
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP08

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Weipa Airport
JOB NO: 1780457

COORDS: 600233.0 m E 8598208.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0		DS 0.10-0.20 m Rec = 100/100 mm R = 0A			CL	Silty CLAY low to medium plasticity, brown	D	F	
			0.5									
				0.70					red brown			
					DS 0.80-1.00 m Rec = 200/200 mm R = 0A							
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: AP-TP09

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Weipa Airport
JOB NO: 1780457

COORDS: 600197.0 m E 8598171.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low to medium plasticity, brown	D	F	
			0.5		DS 0.10-0.20 m Rec = 100/100 mm R = 0A							
				0.60				GM	Silty GRAVEL medium to coarse grained, rounded, low plasticity, red brown		MD	Bauxite
			1.0		DS 0.80-1.00 m Rec = 200/200 mm R = 0A				TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: FR-TP10

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Fire & Rescue
JOB NO: 1780457

COORDS: 594376.0 m E 8599911.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 0.50 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low plasticity, brown		F	
				0.10								
					0.10-0.20 m Rec = 100/100 mm R = 0A			GM	Silty GRAVEL fine to coarse grained, pale brown	D	D	Ironstone
					0.40-0.50 m Rec = 100/100 mm R = 0A							
			0.5						TEST PIT DISCONTINUED @ 0.50 m BACKFILLED due to refusal			
			1.0									
			1.5									

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GAP gINT FN. F01e
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GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: FR-TP11

CLIENT:	Rio Tinto Weipa	COORDS: 594349.0 m E 8599909.0 m N MGA94 54	SHEET: 1 OF 1
PROJECT:	PFAS Contamination Assessment	SURFACE RL: DATUM: AHD	MACHINE: 423E CAT Backhoe
LOCATION:	Fire & Rescue	PIT DEPTH: 1.00 m	CONTRACTOR: Carpentaria Contracting
JOB NO:	1780457	BUCKET TYPE: 400mm	LOGGED: ERC DATE: 18/10/17
			CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					SM	SAND black, with silt, trace fine sand	D	MD	ash
				0.05				GM	Silty GRAVEL fine to coarse grained, rounded, subangular, pale brown		D	Ironstone
				0.40	0.10-0.20 m Rec = 100/100 mm R = 0A			GM	Silty GRAVEL rounded, and subangular, red brown		MD	
			0.5		0.80-1.00 m Rec = 200/200 mm R = 0A							
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
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GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: FR-TP12

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Fire & Rescue
JOB NO: 1780457

COORDS: 594370.0 m E 8599905.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 0.50 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low to medium plasticity, brown, with subangular and well rounded gravel	D	F	
					DS 0.10-0.20 m Rec = 100/100 mm R = 0A							
				0.30				GM	Silty GRAVEL fine to medium grained, rounded, subangular, red brown		D	Ironstone
					DS 0.40-0.50 m Rec = 100/100 mm R = 0A							
			0.5						TEST PIT DISCONTINUED @ 0.50 m BACKFILLED Target depth of 1m not reached due to refusal			
			1.0									
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: FR-TP13

CLIENT: Rio Tinto Weipa
PROJECT: PFAS Contamination Assessment
LOCATION: Weipa Airport
JOB NO: 1780457

COORDS: 594380.0 m E 8599843.0 m N MGA94 54
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.00 m
BUCKET TYPE: 400mm

SHEET: 1 OF 1
MACHINE: 423E CAT Backhoe
CONTRACTOR: Carpentaria Contracting
LOGGED: ERC DATE: 18/10/17
CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0					CL	Silty CLAY low to medium plasticity, brown	D	F	
				0.20	0.10-0.20 m Rec = 100/100 mm R = 0A			GM	Silty GRAVEL fine to medium grained, rounded, red brown		MD	Bauxite
			0.5		0.80-1.00 m Rec = 200/200 mm R = 0A							
			1.0						TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
RL3

GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

REPORT OF TEST PIT: FR-TP14

CLIENT:	Rio Tinto Weipa	COORDS: 594379.0 m E 8599831.0 m N MGA94 54	SHEET: 1 OF 1
PROJECT:	PFAS Contamination Assessment	SURFACE RL: DATUM: AHD	MACHINE: 423E CAT Backhoe
LOCATION:	Weipa Airport	PIT DEPTH: 1.00 m	CONTRACTOR: Carpentaria Contracting
JOB NO:	1780457	BUCKET TYPE: 400mm	LOGGED: ERC DATE: 18/10/17
			CHECKED: FM DATE: 19/12/17

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	M	Groundwater not encountered	0.0	*0.05*				CL	Silty CLAY low plasticity, brown	D	F	
			0.5		DS 0.10-0.20 m Rec = 100/100 mm R = 0A			GM	Silty GRAVEL fine to medium grained, rounded, red brown		MD	Bauxite
			1.0		DS 0.80-1.00 m Rec = 200/200 mm R = 0A				TEST PIT DISCONTINUED @ 1.00 m BACKFILLED Target Depth			
			1.5									

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GAP gINT FN. F01e
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GAP 8_16.3 UB.GLB Log GAP NON-CORED FULL PAGE 1780457 - RTAW - PFAS - WEIPA.GPJ <<DrawingFile>> 19/12/2017 13:26 8.30.004 Datgel Tools

APPENDIX F

Laboratory Certificates of Analysis and Chain of Custody Documentation

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1810438**	Page	: 1 of 15
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 27-Apr-2018 09:45
Order number	: PO10251	Date Analysis Commenced	: 02-May-2018
C-O-C number	: COC #1	Issue Date	: 09-May-2018 14:01
Sampler	: EMMA CORNISH		
Site	: Project Sam		
Quote number	: BN/112/18		
No. of samples received	: 30		
No. of samples analysed	: 30		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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.

- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EP231X: Particular samples required dilution due to sample matrix . LOR values have been adjusted accordingly.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	PR/EWM/MP_25-4-2018	SW/BEN/UPS_24-4-2018	SW/BEN/DOS_24-4-2018	SW/TRC/UPS_24-4-2018	SW/TRC/DOS_24-4-2018
				Client sampling date / time	25-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00
					EB1810438-001	EB1810438-002	EB1810438-003	EB1810438-004	EB1810438-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0032**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0016**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0112**	<0.0005	**0.0015**	**0.0017**	**0.0009**
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	0.0003	µg/L		**0.0391**	<0.0003	**0.0015**	**0.0015**	**0.0006**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0047**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0162**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0022**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0038**	<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	Client sample ID	PR/EWM/MP_25-4-2018	SW/BEN/UPS_24-4-2018	SW/BEN/DOS_24-4-2018	SW/TRC/UPS_24-4-2018	SW/TRC/DOS_24-4-2018
				Client sampling date / time	25-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00
					EB1810438-001	EB1810438-002	EB1810438-003	EB1810438-004	EB1810438-005
					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		**0.140**	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.008**	<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 PFAS	----	0.0003	µg/L		**0.230**	<0.0003	**0.0030**	**0.0032**	**0.0015**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0503**	<0.0003	**0.0030**	**0.0032**	**0.0015**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.228**	<0.0003	**0.0030**	**0.0032**	**0.0015**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**79.7**	**79.2**	**68.6**	**76.9**	**62.7**
13C8-PFOA	----	0.0005	%		**117**	**100**	**88.1**	**90.3**	**75.9**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LAKE/MCL_24-4-2018	LAKE/PAT_24-4-2018	SW/PAP/UPS_24-4-2018	SW/PAP/DOS_24-4-2018	SW/MAR/UPS_24-4-2018
				Client sampling date / time	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00
					EB1810438-006	EB1810438-007	EB1810438-008	EB1810438-009	EB1810438-010
					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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	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	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
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)				Client sample ID	LAKE/MCL_24-4-2018	LAKE/PAT_24-4-2018	SW/PAP/UPS_24-4-2018	SW/PAP/DOS_24-4-2018	SW/MAR/UPS_24-4-2018
				Client sampling date / time	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810438-006	EB1810438-007	EB1810438-008	EB1810438-009	EB1810438-010
					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		<0.001	<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 PFAS	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	**0.0008**	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	**0.0008**	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**69.2**	**72.7**	**101**	**83.3**	**83.7**
13C8-PFOA	----	0.0005	%		**95.1**	**106**	**110**	**104**	**85.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SW/MAR/DOS_24-4-2018	PR/AND/HEQW_23-4-2018	PR/AND/WS_23-4-2018	SP/TDC/UPS_23-4-2018	SP/BOT_23-4-2018
				Client sampling date / time	24-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00
					EB1810438-011	EB1810438-012	EB1810438-013	EB1810438-014	EB1810438-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.0005**	**0.0094**	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		<0.0003	**0.0014**	**0.0300**	<0.0003	<0.0003
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0020**	<0.0020	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0030**	**0.0146**	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0009**	**0.0030**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	**0.0044**	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0050	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.005	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.005	<0.001	<0.001

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SW/MAR/DOS_24-4-2018	PR/AND/HEQW_23-4-2018	PR/AND/WS_23-4-2018	SP/TDC/UPS_23-4-2018	SP/BOT_23-4-2018
				Client sampling date / time	24-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00
					EB1810438-011	EB1810438-012	EB1810438-013	EB1810438-014	EB1810438-015
					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	<0.005	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.005	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0020	<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		<0.001	**0.003**	**0.294**	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	**0.016**	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.002	<0.001	<0.001
EP231P: PFAS Sums									
Sum of PFAS	----	0.0003	µg/L		<0.0003	**0.0108**	**0.371**	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	**0.0019**	**0.0394**	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	**0.0108**	**0.371**	<0.0003	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**80.7**	**75.5**	**110**	**79.3**	**74.6**
13C8-PFOA	----	0.0005	%		**109**	**91.5**	**95.0**	**107**	**101**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SP/AND/SLTS_23-4-2018	SP/ELY/MS3_23-4-2018	MRC/UPS_24-4-2018	MRC/DOS_24-4-108	PR/EWM/WP/DOS_25-4-2018
				Client sampling date / time	23-Apr-2018 00:00	23-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	25-Apr-2018 00:00
					EB1810438-016	EB1810438-017	EB1810438-018	EB1810438-019	EB1810438-020
					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	**0.0083**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0036**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0014**	**0.0309**
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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	**0.0010**	**0.0614**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0114**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0291**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0065**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0127**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0031**
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: WATER (Matrix: WATER)				Client sample ID	SP/AND/SLTS_23-4-2018	SP/ELY/MS3_23-4-2018	MRC/UPS_24-4-2018	MRC/DOS_24-4-108	PR/EWM/WP/DOS_25-4-2018
				Client sampling date / time	23-Apr-2018 00:00	23-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	25-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810438-016	EB1810438-017	EB1810438-018	EB1810438-019	EB1810438-020
					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	**0.746**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	**0.020**
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 PFAS	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	**0.0024**	**0.935**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	**0.0024**	**0.0923**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	**0.0024**	**0.926**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**69.6**	**79.9**	**69.3**	**81.4**	**68.1**
13C8-PFOA	----	0.0005	%		**112**	**93.1**	**93.0**	**102**	**87.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	PR/AND/WS/DOS_23-4-2018	SP/ELY/MS1_23-4-2018	PR/AND/DOS_23-4-2018	QC104_24-4-2018	QC105_24-4-2018
				Client sampling date / time	23-Apr-2018 00:00	23-Apr-2018 00:00	24-Apr-2018 00:00	30-Apr-2018 00:00	23-Apr-2018 00:00
					EB1810438-021	EB1810438-023	EB1810438-024	EB1810438-025	EB1810438-026
					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	**0.0099**	<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	0.0003	µg/L		<0.0003	<0.0003	**0.0217**	<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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	**0.0115**	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	**0.0349**	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	**0.0060**	<0.0005	**0.0006**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	**0.0050**	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	**0.0009**	<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)				Client sample ID	PR/AND/WS/DOS_23-4-2018	SP/ELY/MS1_23-4-2018	PR/AND/DOS_23-4-2018	QC104_24-4-2018	QC105_24-4-2018
				Client sampling date / time	23-Apr-2018 00:00	23-Apr-2018 00:00	24-Apr-2018 00:00	30-Apr-2018 00:00	23-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810438-021	EB1810438-023	EB1810438-024	EB1810438-025	EB1810438-026
					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	**0.449**	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	**0.026**	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	**0.003**	<0.001	<0.001
EP231P: PFAS Sums									
Sum of PFAS	----	0.0003	µg/L		<0.0003	<0.0003	**0.568**	<0.0003	**0.0016**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	**0.0316**	<0.0003	**0.0010**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	<0.0003	**0.564**	<0.0003	**0.0016**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**67.4**	**96.7**	**68.6**	**72.9**	**102**
13C8-PFOA	----	0.0005	%		**82.9**	**90.8**	**79.4**	**75.2**	**93.5**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	QC106_24-4-2018	QC303_23-4-2018	QC304_23-4-2018	NO ID (A)	NO ID (B)
				Client sampling date / time	24-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00
					EB1810438-027	EB1810438-028	EB1810438-029	EB1810438-030	EB1810438-031
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0051**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0019**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0210**	<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	0.0003	µg/L		**0.0287**	<0.0003	<0.0003	<0.0003	<0.0003
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0019**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0143**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0028**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0031**	<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)				Client sample ID	QC106_24-4-2018	QC303_23-4-2018	QC304_23-4-2018	NO ID (A)	NO ID (B)
				Client sampling date / time	24-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00	23-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810438-027	EB1810438-028	EB1810438-029	EB1810438-030	EB1810438-031
					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		**0.170**	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		**0.006**	<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 PFAS	----	0.0003	µg/L		**0.255**	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0497**	<0.0003	<0.0003	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.253**	<0.0003	<0.0003	<0.0003	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**81.4**	**73.7**	**72.2**	**68.7**	**60.8**
13C8-PFOA	----	0.0005	%		**93.7**	**93.8**	**99.9**	**93.3**	**79.9**

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1810438**	Page	: 1 of 12
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 27-Apr-2018
Order number	: PO10251	Date Analysis Commenced	: 02-May-2018
C-O-C number	: COC #1	Issue Date	: 09-May-2018
Sampler	: EMMA CORNISH		
Site	: Project Sam		
Quote number	: BN/112/18		
No. of samples received	: 30		
No. of samples analysed	: 30		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1609385)									
EB1810438-001	PR/EWM/MP_25-4-2018	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0391	0.0392	0.255	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0032	0.0034	7.27	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0016	0.0016	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0112	0.0111	0.00	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EB1810438-011	SW/MAR/DOS_24-4-2018	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1617737)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1617737) - continued									
EB1810438-017	SP/ELY/MS3_23-4-2018	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EB1810438-028	QC303_23-4-2018	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1609385)									
EB1810438-001	PR/EWM/MP_25-4-2018	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0047	0.0041	15.0	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0162	0.0156	3.40	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0022	0.0022	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0038	0.0035	8.70	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1810438-011	SW/MAR/DOS_24-4-2018	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1609385) - continued									
EB1810438-011	SW/MAR/DOS_24-4-2018	EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1617737)									
EB1810438-017	SP/ELY/MS3_23-4-2018	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1810438-028	QC303_23-4-2018	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1609385)									
EB1810438-001	PR/EWM/MP_25-4-2018	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1609385) - continued									
EB1810438-001	PR/EWM/MP_25-4-2018	EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1810438-011	SW/MAR/DOS_24-4-2018	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1617737)									
EB1810438-017	SP/ELY/MS3_23-4-2018	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1810438-028	QC303_23-4-2018	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1617737) - continued									
EB1810438-028	QC303_23-4-2018	EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1609385)									
EB1810438-001	PR/EWM/MP_25-4-2018	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	0.140	0.136	2.42	0% - 20%
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	0.008	0.008	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1810438-011	SW/MAR/DOS_24-4-2018	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1617737)									
EB1810438-017	SP/ELY/MS3_23-4-2018	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1810438-028	QC303_23-4-2018	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1617737) - continued									
EB1810438-028	QC303_23-4-2018	EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1609385)									
EB1810438-001	PR/EWM/MP_25-4-2018	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.230	0.225	2.33	0% - 20%
EB1810438-011	SW/MAR/DOS_24-4-2018	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1617737)									
EB1810438-017	SP/ELY/MS3_23-4-2018	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
EB1810438-028	QC303_23-4-2018	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1609385)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	92.2	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	103	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	99.4	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	113	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	93.0	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	50.0	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1617737)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	86.8	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	85.4	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	86.0	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	113	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	94.4	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	61.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1609385)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	67.9	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	124	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	114	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	110	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	110	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	83.0	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	60.2	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	46.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	43.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	61.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	61.0	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1617737)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	30.0	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	90.2	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	96.0	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	90.0	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	79.2	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	71.2	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	52.4	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	50.4	40	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1617737) - continued								
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	45.4	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	43.0	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	54.6	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1609385)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	76.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	53.3	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	59.5	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	91.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	81.5	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	46.8	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	48.2	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1617737)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	64.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	61.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	57.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	60.9	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	68.1	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	40.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	51.8	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1609385)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	98.8	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	115	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	95.8	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	66.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1617737)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	93.8	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	84.6	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	98.0	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	106	50	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231P: PFAS Sums (QCLot: 1609385)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231P: PFAS Sums (QCLot: 1617737)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1609385)							
EB1810438-002	SW/BEN/UPS_24-4-2018	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	74.2	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	86.6	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	84.4	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	106	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	90.2	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	38.4	30	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1617737)							
EB1810438-018	MRC/UPS_24-4-2018	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	88.6	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	89.6	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	91.8	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	77.8	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	59.2	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	37.6	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1609385)							
EB1810438-002	SW/BEN/UPS_24-4-2018	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	46.7	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	87.6	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	82.6	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	78.6	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	95.8	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	71.0	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	50.4	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	34.8	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	38.2	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	62.2	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	47.8	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1617737)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1617737) - continued							
EB1810438-018	MRC/UPS_24-4-2018	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	41.0	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	89.4	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	96.8	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	91.4	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	82.4	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	69.2	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	58.6	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	53.6	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	47.0	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	40.8	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	55.9	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1609385)							
EB1810438-002	SW/BEN/UPS_24-4-2018	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	67.6	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	49.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	62.9	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	58.1	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	54.6	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	36.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	35.8	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1617737)							
EB1810438-018	MRC/UPS_24-4-2018	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	69.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	56.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	53.3	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	67.7	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	63.9	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	39.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	38.8	30	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1609385)							
EB1810438-002	SW/BEN/UPS_24-4-2018	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	72.6	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	95.4	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	85.0	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	51.2	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1617737)							
EB1810438-018	MRC/UPS_24-4-2018	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	95.6	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	85.0	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	101	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	105	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1810438**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 27-Apr-2018
Site	: Project Sam	Issue Date	: 09-May-2018
Sampler	: EMMA CORNISH	No. of samples received	: 30
Order number	: PO10251	No. of samples analysed	: 30

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-ST)								
PR/AND/HEQW_23-4-2018,	PR/AND/WS_23-4-2018,	**23-Apr-2018**	**02-May-2018**	20-Oct-2018	✓	**02-May-2018**	20-Oct-2018	✓
SP/TDC/UPS_23-4-2018,	SP/BOT_23-4-2018,							
SP/AND/SLTS_23-4-2018								
HDPE (no PTFE) (EP231X-ST)								
SP/ELY/MS3_23-4-2018,	PR/AND/WS/DOS_23-4-2018,	**23-Apr-2018**	**04-May-2018**	20-Oct-2018	✓	**07-May-2018**	20-Oct-2018	✓
SP/ELY/MS1_23-4-2018,	QC105_24-4-2018,							
QC303_23-4-2018,	QC304_23-4-2018,							
NO ID (A),	NO ID (B)							
HDPE (no PTFE) (EP231X-ST)								
SW/BEN/UPS_24-4-2018,	SW/BEN/DOS_24-4-2018,	**24-Apr-2018**	**02-May-2018**	21-Oct-2018	✓	**02-May-2018**	21-Oct-2018	✓
SW/TRC/UPS_24-4-2018,	SW/TRC/DOS_24-4-2018,							
LAKE/MCL_24-4-2018,	LAKE/PAT_24-4-2018,							
SW/PAP/UPS_24-4-2018,	SW/PAP/DOS_24-4-2018,							
SW/MAR/UPS_24-4-2018,	SW/MAR/DOS_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
MRC/UPS_24-4-2018,	MRC/DOS_24-4-108,	**24-Apr-2018**	**04-May-2018**	21-Oct-2018	✓	**07-May-2018**	21-Oct-2018	✓
PR/AND/DOS_23-4-2018,	QC106_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/MP_25-4-2018		**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/WP/DOS_25-4-2018		**25-Apr-2018**	**04-May-2018**	22-Oct-2018	✓	**07-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC104_24-4-2018		**30-Apr-2018**	**04-May-2018**	27-Oct-2018	✓	**07-May-2018**	27-Oct-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
PR/AND/HEQW_23-4-2018,	PR/AND/WS_23-4-2018,	**23-Apr-2018**	**02-May-2018**	20-Oct-2018	✓	**02-May-2018**	20-Oct-2018	✓
SP/TDC/UPS_23-4-2018,	SP/BOT_23-4-2018,							
SP/AND/SLTS_23-4-2018								
HDPE (no PTFE) (EP231X-ST)								
SP/ELY/MS3_23-4-2018,	PR/AND/WS/DOS_23-4-2018,	**23-Apr-2018**	**04-May-2018**	20-Oct-2018	✓	**07-May-2018**	20-Oct-2018	✓
SP/ELY/MS1_23-4-2018,	QC105_24-4-2018,							
QC303_23-4-2018,	QC304_23-4-2018,							
NO ID (A),	NO ID (B)							
HDPE (no PTFE) (EP231X-ST)								
SW/BEN/UPS_24-4-2018,	SW/BEN/DOS_24-4-2018,	**24-Apr-2018**	**02-May-2018**	21-Oct-2018	✓	**02-May-2018**	21-Oct-2018	✓
SW/TRC/UPS_24-4-2018,	SW/TRC/DOS_24-4-2018,							
LAKE/MCL_24-4-2018,	LAKE/PAT_24-4-2018,							
SW/PAP/UPS_24-4-2018,	SW/PAP/DOS_24-4-2018,							
SW/MAR/UPS_24-4-2018,	SW/MAR/DOS_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
MRC/UPS_24-4-2018,	MRC/DOS_24-4-108,	**24-Apr-2018**	**04-May-2018**	21-Oct-2018	✓	**07-May-2018**	21-Oct-2018	✓
PR/AND/DOS_23-4-2018,	QC106_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/MP_25-4-2018		**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/WP/DOS_25-4-2018		**25-Apr-2018**	**04-May-2018**	22-Oct-2018	✓	**07-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC104_24-4-2018		**30-Apr-2018**	**04-May-2018**	27-Oct-2018	✓	**07-May-2018**	27-Oct-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
PR/AND/HEQW_23-4-2018,	PR/AND/WS_23-4-2018,	**23-Apr-2018**	**02-May-2018**	20-Oct-2018	✓	**02-May-2018**	20-Oct-2018	✓
SP/TDC/UPS_23-4-2018,	SP/BOT_23-4-2018,							
SP/AND/SLTS_23-4-2018								
HDPE (no PTFE) (EP231X-ST)								
SP/ELY/MS3_23-4-2018,	PR/AND/WS/DOS_23-4-2018,	**23-Apr-2018**	**04-May-2018**	20-Oct-2018	✓	**07-May-2018**	20-Oct-2018	✓
SP/ELY/MS1_23-4-2018,	QC105_24-4-2018,							
QC303_23-4-2018,	QC304_23-4-2018,							
NO ID (A),	NO ID (B)							
HDPE (no PTFE) (EP231X-ST)								
SW/BEN/UPS_24-4-2018,	SW/BEN/DOS_24-4-2018,	**24-Apr-2018**	**02-May-2018**	21-Oct-2018	✓	**02-May-2018**	21-Oct-2018	✓
SW/TRC/UPS_24-4-2018,	SW/TRC/DOS_24-4-2018,							
LAKE/MCL_24-4-2018,	LAKE/PAT_24-4-2018,							
SW/PAP/UPS_24-4-2018,	SW/PAP/DOS_24-4-2018,							
SW/MAR/UPS_24-4-2018,	SW/MAR/DOS_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
MRC/UPS_24-4-2018,	MRC/DOS_24-4-108,	**24-Apr-2018**	**04-May-2018**	21-Oct-2018	✓	**07-May-2018**	21-Oct-2018	✓
PR/AND/DOS_23-4-2018,	QC106_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/MP_25-4-2018		**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/WP/DOS_25-4-2018		**25-Apr-2018**	**04-May-2018**	22-Oct-2018	✓	**07-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC104_24-4-2018		**30-Apr-2018**	**04-May-2018**	27-Oct-2018	✓	**07-May-2018**	27-Oct-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
PR/AND/HEQW_23-4-2018,	PR/AND/WS_23-4-2018,	**23-Apr-2018**	**02-May-2018**	20-Oct-2018	✓	**02-May-2018**	20-Oct-2018	✓
SP/TDC/UPS_23-4-2018,	SP/BOT_23-4-2018,							
SP/AND/SLTS_23-4-2018								
HDPE (no PTFE) (EP231X-ST)								
SP/ELY/MS3_23-4-2018,	PR/AND/WS/DOS_23-4-2018,	**23-Apr-2018**	**04-May-2018**	20-Oct-2018	✓	**07-May-2018**	20-Oct-2018	✓
SP/ELY/MS1_23-4-2018,	QC105_24-4-2018,							
QC303_23-4-2018,	QC304_23-4-2018,							
NO ID (A),	NO ID (B)							
HDPE (no PTFE) (EP231X-ST)								
SW/BEN/UPS_24-4-2018,	SW/BEN/DOS_24-4-2018,	**24-Apr-2018**	**02-May-2018**	21-Oct-2018	✓	**02-May-2018**	21-Oct-2018	✓
SW/TRC/UPS_24-4-2018,	SW/TRC/DOS_24-4-2018,							
LAKE/MCL_24-4-2018,	LAKE/PAT_24-4-2018,							
SW/PAP/UPS_24-4-2018,	SW/PAP/DOS_24-4-2018,							
SW/MAR/UPS_24-4-2018,	SW/MAR/DOS_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
MRC/UPS_24-4-2018,	MRC/DOS_24-4-108,	**24-Apr-2018**	**04-May-2018**	21-Oct-2018	✓	**07-May-2018**	21-Oct-2018	✓
PR/AND/DOS_23-4-2018,	QC106_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/MP_25-4-2018		**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/WP/DOS_25-4-2018		**25-Apr-2018**	**04-May-2018**	22-Oct-2018	✓	**07-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC104_24-4-2018		**30-Apr-2018**	**04-May-2018**	27-Oct-2018	✓	**07-May-2018**	27-Oct-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
PR/AND/HEQW_23-4-2018,	PR/AND/WS_23-4-2018,	**23-Apr-2018**	**02-May-2018**	20-Oct-2018	✓	**02-May-2018**	20-Oct-2018	✓
SP/TDC/UPS_23-4-2018,	SP/BOT_23-4-2018,							
SP/AND/SLTS_23-4-2018								
HDPE (no PTFE) (EP231X-ST)								
SP/ELY/MS3_23-4-2018,	PR/AND/WS/DOS_23-4-2018,	**23-Apr-2018**	**04-May-2018**	20-Oct-2018	✓	**07-May-2018**	20-Oct-2018	✓
SP/ELY/MS1_23-4-2018,	QC105_24-4-2018,							
QC303_23-4-2018,	QC304_23-4-2018,							
NO ID (A),	NO ID (B)							
HDPE (no PTFE) (EP231X-ST)								
SW/BEN/UPS_24-4-2018,	SW/BEN/DOS_24-4-2018,	**24-Apr-2018**	**02-May-2018**	21-Oct-2018	✓	**02-May-2018**	21-Oct-2018	✓
SW/TRC/UPS_24-4-2018,	SW/TRC/DOS_24-4-2018,							
LAKE/MCL_24-4-2018,	LAKE/PAT_24-4-2018,							
SW/PAP/UPS_24-4-2018,	SW/PAP/DOS_24-4-2018,							
SW/MAR/UPS_24-4-2018,	SW/MAR/DOS_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
MRC/UPS_24-4-2018,	MRC/DOS_24-4-108,	**24-Apr-2018**	**04-May-2018**	21-Oct-2018	✓	**07-May-2018**	21-Oct-2018	✓
PR/AND/DOS_23-4-2018,	QC106_24-4-2018							
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/MP_25-4-2018		**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
PR/EWM/WP/DOS_25-4-2018		**25-Apr-2018**	**04-May-2018**	22-Oct-2018	✓	**07-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC104_24-4-2018		**30-Apr-2018**	**04-May-2018**	27-Oct-2018	✓	**07-May-2018**	27-Oct-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	4	36	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction and LC-Electrospray-MS-MS, Negative Mode using MRM. This method is targetted to pristine environmental and drinking waters reportin at sub-parts per trillion. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1810438**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: gwhitmore@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 18100235	Page	: 1 of 3
Order number	: PO10251	Quote number	: EB2018GOLASS0004 (BN/112/18)
C-O-C number	: COC #1	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project Sam		
Sampler	: EMMA CORNISH		

Dates

Date Samples Received	: 27-Apr-2018 09:45	Issue Date	: 30-Apr-2018
Client Requested Due Date	: 09-May-2018	Scheduled Reporting Date	: **09-May-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 15.2, 17.5°C - Ice present
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 30 / 30

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised that sample "SW/LUT/UPS_23-4-2018" and "QC402_23-4-2018" were not received.**
- ***SRN Reissued 30/4/18: As per the email received from Greg Whimore 30/4/18, analysis has now been assigned to the two samples without ID's.***
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Two samples were received without sample ID's on them. These have been entered as "NO ID (A)" and "NO ID (B)" (ALS #30-31).**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EB1810438-002	[24-Apr-2018]	SW/BEN/UPS_24-4-2018
EB1810438-003	[24-Apr-2018]	SW/BEN/DOS_24-4-2018
EB1810438-004	[24-Apr-2018]	SW/TRC/UPS_24-4-2018
EB1810438-005	[24-Apr-2018]	SW/TRC/DOS_24-4-2018
EB1810438-008	[24-Apr-2018]	SW/PAP/UPS_24-4-2018
EB1810438-009	[24-Apr-2018]	SW/PAP/DOS_24-4-2018
EB1810438-010	[24-Apr-2018]	SW/MAR/UPS_24-4-2018
EB1810438-011	[24-Apr-2018]	SW/MAR/DOS_24-4-2018
EB1810438-012	[23-Apr-2018]	PR/AND/HEQW_23-4-2018
EB1810438-014	[23-Apr-2018]	SP/TDC/UPS_23-4-2018
EB1810438-016	[23-Apr-2018]	SP/AND/SLTS_23-4-2018
EB1810438-017	[23-Apr-2018]	SP/ELY/MS3_23-4-2018
EB1810438-020	[25-Apr-2018]	PR/EWM/WP/DOS_25-4-2018
EB1810438-021	[23-Apr-2018]	PR/AND/WS/DOS_23-4-2018
EB1810438-023	[23-Apr-2018]	SP/ELY/MS1_23-4-2018
EB1810438-024	[24-Apr-2018]	PR/AND/DOS_23-4-2018

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	*Client sampling date / time*	*Client sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB1810438-001	25-Apr-2018 00:00	PR/EWM/MP_25-4-2018	✓
EB1810438-002	24-Apr-2018 00:00	SW/BEN/UPS_24-4-2018	✓
EB1810438-003	24-Apr-2018 00:00	SW/BEN/DOS_24-4-2018	✓
EB1810438-004	24-Apr-2018 00:00	SW/TRC/UPS_24-4-2018	✓
EB1810438-005	24-Apr-2018 00:00	SW/TRC/DOS_24-4-2018	✓
EB1810438-006	24-Apr-2018 00:00	LAKE/MCL_24-4-2018	✓
EB1810438-007	24-Apr-2018 00:00	LAKE/PAT_24-4-2018	✓
EB1810438-008	24-Apr-2018 00:00	SW/PAP/UPS_24-4-2018	✓
EB1810438-009	24-Apr-2018 00:00	SW/PAP/DOS_24-4-2018	✓
EB1810438-010	24-Apr-2018 00:00	SW/MAR/UPS_24-4-2018	✓
EB1810438-011	24-Apr-2018 00:00	SW/MAR/DOS_24-4-2018	✓
EB1810438-012	23-Apr-2018 00:00	PR/AND/HEQW_23-4-2018	✓
EB1810438-013	23-Apr-2018 00:00	PR/AND/WS_23-4-2018	✓
EB1810438-014	23-Apr-2018 00:00	SP/TDC/UPS_23-4-2018	✓
EB1810438-015	23-Apr-2018 00:00	SP/BOT_23-4-2018	✓
EB1810438-016	23-Apr-2018 00:00	SP/AND/SLTS_23-4-2018	✓
EB1810438-017	23-Apr-2018 00:00	SP/ELY/MS3_23-4-2018	✓
EB1810438-018	24-Apr-2018 00:00	MRC/UPS_24-4-2018	✓
EB1810438-019	24-Apr-2018 00:00	MRC/DOS_24-4-108	✓
EB1810438-020	25-Apr-2018 00:00	PR/EWM/WP/DOS_25-4-2...	✓

			WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB1810438-021	23-Apr-2018 00:00	PR/AND/WS/DOS_23-4-2...	✓
EB1810438-023	23-Apr-2018 00:00	SP/ELY/MS1_23-4-2018	✓
EB1810438-024	24-Apr-2018 00:00	PR/AND/DOS_23-4-2018	✓
EB1810438-025	30-Apr-2018 00:00	QC104_24-4-2018	✓
EB1810438-026	23-Apr-2018 00:00	QC105_24-4-2018	✓
EB1810438-027	24-Apr-2018 00:00	QC106_24-4-2018	✓
EB1810438-028	23-Apr-2018 00:00	QC303_23-4-2018	✓
EB1810438-029	23-Apr-2018 00:00	QC304_23-4-2018	✓
EB1810438-030	23-Apr-2018 00:00	NO ID (A)	✓
EB1810438-031	23-Apr-2018 00:00	NO ID (B)	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

GREG WHITMORE

- *AU Certificate of Analysis - NATA (COA)	Email	gwhitmore@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gwhitmore@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gwhitmore@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gwhitmore@golder.com.au
- Chain of Custody (CoC) (COC)	Email	gwhitmore@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	gwhitmore@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	gwhitmore@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	gwhitmore@golder.com.au

COC#1

1 OF 3

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

ALS - Brisbane

PO10253

GOLDEN

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	No OF CONTAINERS	Leaf Concentration (Low/High Volume)	PFAS - Full Suite (28 Analytes) Low Level (EP231X-LL)	PFAS – Supp. Tox. Long Suite (24 analytes) (EP231X-ST)
1	PR/EWM/WP_25-4-2018		25/04/2018		Water	1	Unknown		X
2	SW/BEN/UPS_24-4-2018		24/04/2018		Water	1	Unknown		X
3	SW/BEN/DOS_24-4-2018		24/04/2018		Water	1	Unknown		X
4	SW/TRC/UPS_24-4-2018		24/04/2018		Water	1	Unknown		X
5	SW/TRC/DOS_24-4-2018		24/04/2018		Water	1	Unknown		X
6	LAKE/MCL_24-4-2018		24/04/2018		Water	1	Unknown		X
7	LAKE/PAT_24-4-2018		24/04/2018		Water	1	Unknown		X
8	SW/PAP/UPS_24-4-2018		24/4/208		Water	1	Unknown		X
9	SW/PAP/DOS_24-4-2018		24/04/2018		Water	1	Unknown		X
10	SW/MAR/UPS_24-4-2018		24/04/2018		Water	1	Unknown		X

Environmental Division
Brisbane
Work Order Reference
EB1810438

Telephone : + 61-7-3243 7222

	COMPANY	DATE	TIME
RELEASED BY	E. Currish	GOLDER	25/4/2018	10:00
RECEIVED BY	JUSTIN ANG	ALS	27/4/18	9:45
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

THIS FORM IS TO BE SIGNED BY GOLDER STAFF, COURIER & LABORATORY ON RECEIPT OF SAMPLES.

COC #1

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LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Preservation (Lab/Field if known)	PFAS – Full Suite (24 analytes) (EP231X-LL)	PFAS – Super Trace Long Suite (28 analytes) (EP231X-ST)	Comments
11	SW/MAR/DOS_24-4-2018		24/04/2018		Water	1	Unknown		X	
12	PR/AND/HEQW_23-4-2018		23/04/2018		Water	1	Unknown		X	
13	PR/AND/WS_23-4-2018		23/04/2018		Water	1	Unknown		X	
14	SP/TDC/UPS_23-4-2018		23/04/2018		Water	1	Unknown		X	
15	SP/BOT_23-4-2018		23/04/2018		Water	1	Unknown		X	
16	SP/AND/SLTS_23-4-2018		23/04/2018		Water	1	Unknown		X	
17	SP/ELY/MS3_23-4-2018		23/04/2018		Water	1	Unknown		X	
18	MRC/UPS_24-4-2018		24/04/2018		Water	1	Unknown		X	
19	MRC/DOS_24-4-108		24/04/2018		Water	1	Unknown		X	
20	PR/EWM/WP/DOS_25-4-2018		25/04/2018		Water	1	Unknown		X	

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Corish	GOLDER	26/4/18	10:00
RECEIVED BY		ACS	27/4/18	9:45
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

COC #1

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION

ALS - Brisbane

GOLDER

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No. CONTAINERS	Level of Contamination	PFAS - Full Suite (28 Analytes) Low Level (EP231X-LL)	PFAS - Super Trace Long Suite (28 analytes) (EP231X-ST)
21	PR/AND/WS/DOS_23-4-2018		23/04/2018		Water	1	Unknown		X
SNR 22	SW/LUT/UPS_23-4-2018		23/04/2018		Water	1	Unknown		X
23	SP/ELY/MS1_23-4-2018		23/04/2018		Water	1	Unknown		X
24	PR/AND/DOS_23-4-2018		23/04/2018		Water	1	Unknown		X
25	QC104_24-4-2018		24/04/2018		Water	1	Unknown		X
26	QC105_24-4-2018		24/04/2018		Water	1	Unknown		X
27	QC106_24-4-2018		24/04/2018		Water	1	Unknown		X
28	QC303_23-4-2018		23/04/2018		Water	1	Unknown		X
29	QC304_23-4-2018		23/04/2018		Water	1	Unknown		X
SNR ~~30~~	QC402_23-4-2018		23/04/2018		Water	1	Unknown		X

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	F. Cornish GRL	GOLDER	25/4/18	10:00
RECEIVED BY	[signature]	JV	27/4/18	9:45
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

30 NO ID (A)

31 NO ID (B).

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIERS; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1810440**	Page	: 1 of 15
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 27-Apr-2018 09:45
Order number	: PO10249	Date Analysis Commenced	: 02-May-2018
C-O-C number	: COC #3	Issue Date	: 04-May-2018 12:12
Sampler	: EMMA CORNISH		
Site	: Project Sam		
Quote number	: BN/112/18		
No. of samples received	: 30		
No. of samples analysed	: 30		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SA091_25-4-2018	SA093_25-4-2018	SA026_25-4-2018	SA009_25-4-2018	SA027_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	26-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
					EB1810440-001	EB1810440-002	EB1810440-003	EB1810440-004	EB1810440-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L		<0.002	<0.002	**0.004**	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L		<0.002	<0.002	**0.004**	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L		**0.003**	**0.002**	**0.014**	**0.002**	**0.008**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L		<0.002	<0.002	**0.017**	**0.007**	**0.003**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L		<0.002	<0.002	**0.004**	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SA091_25-4-2018	SA093_25-4-2018	SA026_25-4-2018	SA009_25-4-2018	SA027_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	26-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810440-001	EB1810440-002	EB1810440-003	EB1810440-004	EB1810440-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums									
Sum of PFAS	----	0.002	µg/L		**0.003**	**0.002**	**0.043**	**0.009**	**0.011**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L		**0.003**	**0.002**	**0.031**	**0.009**	**0.011**
Sum of PFAS (WA DER List)	----	0.002	µg/L		**0.003**	**0.002**	**0.039**	**0.009**	**0.011**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.002	%		**77.1**	**108**	**81.6**	**77.1**	**86.8**
13C8-PFOA	----	0.002	%		**96.4**	**107**	**96.8**	**94.6**	**95.3**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SA351_25-4-2018	SA107_25-4-2018	SA349_25-4-2018	SA038_25-4-2018	SA041_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
					EB1810440-006	EB1810440-007	EB1810440-008	EB1810440-009	EB1810440-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0.002**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0.002**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SA351_25-4-2018	SA107_25-4-2018	SA349_25-4-2018	SA038_25-4-2018	SA041_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810440-006	EB1810440-007	EB1810440-008	EB1810440-009	EB1810440-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums									
Sum of PFAS	----	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0.004**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0.004**
Sum of PFAS (WA DER List)	----	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0.004**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.002	%		**84.6**	**94.0**	**77.3**	**77.5**	**98.3**
13C8-PFOA	----	0.002	%		**94.0**	**105**	**83.2**	**92.7**	**96.2**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SA037_25-4-2018	SA036_25-4-2018	SA39_25-4-2018	SA350_25-4-2018	SA110_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
					EB1810440-011	EB1810440-012	EB1810440-013	EB1810440-014	EB1810440-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L		<0.002	<0.002	**0.009**	<0.002	**0.005**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L		<0.002	<0.002	**0.010**	<0.002	**0.002**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SA037_25-4-2018	SA036_25-4-2018	SA39_25-4-2018	SA350_25-4-2018	SA110_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810440-011	EB1810440-012	EB1810440-013	EB1810440-014	EB1810440-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums									
Sum of PFAS	----	0.002	µg/L		<0.002	<0.002	**0.019**	<0.002	**0.007**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L		<0.002	<0.002	**0.019**	<0.002	**0.007**
Sum of PFAS (WA DER List)	----	0.002	µg/L		<0.002	<0.002	**0.019**	<0.002	**0.007**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.002	%		**106**	**100**	**86.4**	**78.6**	**84.5**
13C8-PFOA	----	0.002	%		**96.9**	**101**	**93.0**	**102**	**97.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SA017_25-4-2018	SA020_25-4-2018	SA013_25-4-2018	SA012_25-4-2018	SA015_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
					EB1810440-016	EB1810440-017	EB1810440-018	EB1810440-019	EB1810440-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L		**0.005**	**0.004**	**0.005**	**0.008**	**0.003**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L		<0.002	**0.005**	**0.002**	**0.004**	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SA017_25-4-2018	SA020_25-4-2018	SA013_25-4-2018	SA012_25-4-2018	SA015_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810440-016	EB1810440-017	EB1810440-018	EB1810440-019	EB1810440-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums									
Sum of PFAS	----	0.002	µg/L		**0.005**	**0.009**	**0.007**	**0.012**	**0.003**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L		**0.005**	**0.009**	**0.007**	**0.012**	**0.003**
Sum of PFAS (WA DER List)	----	0.002	µg/L		**0.005**	**0.009**	**0.007**	**0.012**	**0.003**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.002	%		**77.1**	**106**	**94.5**	**71.1**	**71.0**
13C8-PFOA	----	0.002	%		**99.2**	**100**	**96.9**	**90.9**	**94.5**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SA014_25-4-2018	TWD_26-4-2018	LPTA_25-4-2018	APT_25-4-2018	QC101_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	26-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
					EB1810440-021	EB1810440-022	EB1810440-023	EB1810440-024	EB1810440-025
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L		**0.005**	**0.003**	**0.005**	**0.002**	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L		**0.003**	**0.004**	**0.008**	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SA014_25-4-2018	TWD_26-4-2018	LPTA_25-4-2018	APT_25-4-2018	QC101_25-4-2018
				Client sampling date / time	25-Apr-2018 00:00	26-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00	25-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810440-021	EB1810440-022	EB1810440-023	EB1810440-024	EB1810440-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums									
Sum of PFAS	----	0.002	µg/L		**0.008**	**0.007**	**0.013**	**0.002**	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L		**0.008**	**0.007**	**0.013**	**0.002**	<0.002
Sum of PFAS (WA DER List)	----	0.002	µg/L		**0.008**	**0.007**	**0.013**	**0.002**	<0.002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.002	%		**79.2**	**88.8**	**92.5**	**86.5**	**116**
13C8-PFOA	----	0.002	%		**89.8**	**96.8**	**104**	**96.5**	**98.6**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	QC102_25-4-2018	QC103_25-4-2018	QC301_26-4-2018	QC302_26-4-2018	QC401_26-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	26-Apr-2018 00:00	26-Apr-2018 00:00	26-Apr-2018 00:00
					EB1810440-026	EB1810440-027	EB1810440-028	EB1810440-029	EB1810440-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L		**0.003**	**0.009**	<0.002	<0.002	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L		**0.002**	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC102_25-4-2018	QC103_25-4-2018	QC301_26-4-2018	QC302_26-4-2018	QC401_26-4-2018
				Client sampling date / time	25-Apr-2018 00:00	25-Apr-2018 00:00	26-Apr-2018 00:00	26-Apr-2018 00:00	26-Apr-2018 00:00
Compound	CAS Number	LOR	Unit		EB1810440-026	EB1810440-027	EB1810440-028	EB1810440-029	EB1810440-030
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums									
Sum of PFAS	----	0.002	µg/L		**0.005**	**0.009**	<0.002	<0.002	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L		**0.005**	**0.009**	<0.002	<0.002	<0.002
Sum of PFAS (WA DER List)	----	0.002	µg/L		**0.005**	**0.009**	<0.002	<0.002	<0.002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.002	%		**84.6**	**73.3**	**82.0**	**93.0**	**104**
13C8-PFOA	----	0.002	%		**99.0**	**91.4**	**91.7**	**101**	**101**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130
13C8-PFOA	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1810440**	Page	: 1 of 11
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 27-Apr-2018
Order number	: PO10249	Date Analysis Commenced	: 02-May-2018
C-O-C number	: COC #3	Issue Date	: 04-May-2018
Sampler	: EMMA CORNISH		
Site	: Project Sam		
Quote number	: BN/112/18		
No. of samples received	: 30		
No. of samples analysed	: 30		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1605290)									
EB1810440-001	SA091_25-4-2018	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	0.003	0.003	0.00	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1810440-011	SA037_25-4-2018	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1605291)									
EB1810440-021	SA014_25-4-2018	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1605291) - continued									
EB1810440-021	SA014_25-4-2018	EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	0.005	0.005	0.00	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.003	0.004	26.3	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1605290)									
EB1810440-001	SA091_25-4-2018	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EB1810440-011	SA037_25-4-2018	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1605291)									
EB1810440-021	SA014_25-4-2018	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1605291) - continued									
EB1810440-021	SA014_25-4-2018	EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1605290)									
EB1810440-001	SA091_25-4-2018	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1810440-011	SA037_25-4-2018	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1605291)									
EB1810440-021	SA014_25-4-2018	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1605291) - continued									
EB1810440-021	SA014_25-4-2018	EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1605290)									
EB1810440-001	SA091_25-4-2018	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1810440-011	SA037_25-4-2018	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1605291)									
EB1810440-021	SA014_25-4-2018	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1605290)									
EB1810440-001	SA091_25-4-2018	EP231X-LL: Sum of PFAS	----	0.002	µg/L	0.003	0.003	0.00	No Limit
		EP231X-LL: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	0.003	0.003	0.00	No Limit
		EP231X-LL: Sum of PFAS (WA DER List)	----	0.002	µg/L	0.003	0.003	0.00	No Limit
EB1810440-011	SA037_25-4-2018	EP231X-LL: Sum of PFAS	----	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231P: PFAS Sums (QC Lot: 1605290) - continued									
EB1810440-011	SA037_25-4-2018	EP231X-LL: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1605291)									
EB1810440-021	SA014_25-4-2018	EP231X-LL: Sum of PFAS	----	0.002	µg/L	0.008	0.009	11.8	No Limit
		EP231X-LL: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	0.008	0.009	11.8	No Limit
		EP231X-LL: Sum of PFAS (WA DER List)	----	0.002	µg/L	0.008	0.009	11.8	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1605290)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	99.8	70	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	115	70	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	101	70	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	95.0	70	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1605291)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	99.8	70	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	115	70	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	101	70	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	95.0	70	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1605290)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.25 µg/L	99.6	70	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	101	70	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	103	70	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	99.0	70	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	104	70	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	113	70	130
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	105	70	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	113	70	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	97.0	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1605291)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.25 µg/L	99.6	70	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	101	70	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	103	70	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	99.0	70	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	104	70	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	113	70	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1605291) - continued								
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	105	70	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	113	70	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	97.0	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1605290)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	106	70	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	108	70	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.125 µg/L	91.9	70	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	88.9	70	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	90.6	70	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	109	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1605291)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	102	70	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	106	70	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	108	70	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.125 µg/L	91.9	70	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	88.9	70	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	90.6	70	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	109	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1605290)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	106	70	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	118	70	130
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	104	70	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	85.0	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1605291)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	106	70	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	118	70	130
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	104	70	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	85.0	70	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS: Spike Recovery (%)	Recovery Limits (%): Low	Recovery Limits (%): High
EP231P: PFAS Sums (QCLot: 1605290)								
EP231X-LL: Sum of PFAS	----	0.002	µg/L	<0.002	----	----	----	----
EP231X-LL: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.002	µg/L	<0.002	----	----	----	----
EP231X-LL: Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	----	----	----	----
EP231P: PFAS Sums (QCLot: 1605291)								
EP231X-LL: Sum of PFAS	----	0.002	µg/L	<0.002	----	----	----	----
EP231X-LL: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.002	µg/L	<0.002	----	----	----	----
EP231X-LL: Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	----	----	----	----

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1605290)							
EB1810440-002	SA093_25-4-2018	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	97.8	70	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	113	70	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	118	70	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	121	70	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	106	70	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.05 µg/L	72.8	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1605291)							
EB1810440-022	TWD_26-4-2018	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	100	70	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	105	70	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	106	70	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	98.8	70	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	86.8	70	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.05 µg/L	105	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1605290)							
EB1810440-002	SA093_25-4-2018	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.25 µg/L	100	70	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	98.6	70	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	98.4	70	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	99.4	70	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	109	70	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	108	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1605290) - continued							
EB1810440-002	SA093_25-4-2018	EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	100	70	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	70.4	70	130
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	71.2	70	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	71.4	70	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	86.6	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1605291)							
EB1810440-022	TWD_26-4-2018	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.25 µg/L	101	70	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	101	70	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	105	70	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	96.6	70	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	104	70	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	101	70	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	103	70	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	94.4	70	130
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	113	70	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	121	70	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	81.8	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1605290)							
EB1810440-002	SA093_25-4-2018	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	81.2	70	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	74.3	70	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	73.0	70	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.125 µg/L	70.4	70	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	75.1	70	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	71.8	70	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	71.8	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1605291)							
EB1810440-022	TWD_26-4-2018	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	104	70	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	102	70	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	106	70	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.125 µg/L	87.7	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1605291) - continued							
EB1810440-022	TWD_26-4-2018	EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	97.4	70	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	88.8	70	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	110	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1605290)							
EB1810440-002	SA093_25-4-2018	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	110	70	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	123	70	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	116	70	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	78.6	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1605291)							
EB1810440-022	TWD_26-4-2018	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	109	70	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	118	70	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	95.8	70	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	78.6	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1810440**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 27-Apr-2018
Site	: Project Sam	Issue Date	: 04-May-2018
Sampler	: EMMA CORNISH	No. of samples received	: 30
Order number	: PO10249	No. of samples analysed	: 30

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL)							
SA014_25-4-2018, APT_25-4-2018, QC102_25-4-2018, LPTA_25-4-2018, QC101_25-4-2018, QC103_25-4-2018	**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL)							
SA091_25-4-2018, SA009_25-4-2018, SA351_25-4-2018, SA349_25-4-2018, SA041_25-4-2018, SA036_25-4-2018, SA350_25-4-2018, SA017_25-4-2018, SA013_25-4-2018, SA015_25-4-2018, SA093_25-4-2018, SA027_25-4-2018, SA107_25-4-2018, SA038_25-4-2018, SA037_25-4-2018, SA39_25-4-2018, SA110_25-4-2018, SA020_25-4-2018, SA012_25-4-2018,	**25-Apr-2018**	**03-May-2018**	22-Oct-2018	✓	**03-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL)							
TWD_26-4-2018, QC302_26-4-2018, QC301_26-4-2018, QC401_26-4-2018	**26-Apr-2018**	**02-May-2018**	23-Oct-2018	✓	**02-May-2018**	23-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL)							
SA026_25-4-2018	**26-Apr-2018**	**03-May-2018**	23-Oct-2018	✓	**03-May-2018**	23-Oct-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL) SA014_25-4-2018, LPTA_25-4-2018, APT_25-4-2018, QC101_25-4-2018, QC102_25-4-2018, QC103_25-4-2018	**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA091_25-4-2018, SA093_25-4-2018, SA009_25-4-2018, SA027_25-4-2018, SA351_25-4-2018, SA107_25-4-2018, SA349_25-4-2018, SA038_25-4-2018, SA041_25-4-2018, SA037_25-4-2018, SA036_25-4-2018, SA39_25-4-2018, SA350_25-4-2018, SA110_25-4-2018, SA017_25-4-2018, SA020_25-4-2018, SA013_25-4-2018, SA012_25-4-2018, SA015_25-4-2018	**25-Apr-2018**	**03-May-2018**	22-Oct-2018	✓	**03-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) TWD_26-4-2018, QC301_26-4-2018, QC302_26-4-2018, QC401_26-4-2018	**26-Apr-2018**	**02-May-2018**	23-Oct-2018	✓	**02-May-2018**	23-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA026_25-4-2018	**26-Apr-2018**	**03-May-2018**	23-Oct-2018	✓	**03-May-2018**	23-Oct-2018	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-LL) SA014_25-4-2018, LPTA_25-4-2018, APT_25-4-2018, QC101_25-4-2018, QC102_25-4-2018, QC103_25-4-2018	**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA091_25-4-2018, SA093_25-4-2018, SA009_25-4-2018, SA027_25-4-2018, SA351_25-4-2018, SA107_25-4-2018, SA349_25-4-2018, SA038_25-4-2018, SA041_25-4-2018, SA037_25-4-2018, SA036_25-4-2018, SA39_25-4-2018, SA350_25-4-2018, SA110_25-4-2018, SA017_25-4-2018, SA020_25-4-2018, SA013_25-4-2018, SA012_25-4-2018, SA015_25-4-2018	**25-Apr-2018**	**03-May-2018**	22-Oct-2018	✓	**03-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) TWD_26-4-2018, QC301_26-4-2018, QC302_26-4-2018, QC401_26-4-2018	**26-Apr-2018**	**02-May-2018**	23-Oct-2018	✓	**02-May-2018**	23-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA026_25-4-2018	**26-Apr-2018**	**03-May-2018**	23-Oct-2018	✓	**03-May-2018**	23-Oct-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL) SA014_25-4-2018, LPTA_25-4-2018, APT_25-4-2018, QC101_25-4-2018, QC102_25-4-2018, QC103_25-4-2018	**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA091_25-4-2018, SA093_25-4-2018, SA009_25-4-2018, SA027_25-4-2018, SA351_25-4-2018, SA107_25-4-2018, SA349_25-4-2018, SA038_25-4-2018, SA041_25-4-2018, SA037_25-4-2018, SA036_25-4-2018, SA39_25-4-2018, SA350_25-4-2018, SA110_25-4-2018, SA017_25-4-2018, SA020_25-4-2018, SA013_25-4-2018, SA012_25-4-2018, SA015_25-4-2018	**25-Apr-2018**	**03-May-2018**	22-Oct-2018	✓	**03-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) TWD_26-4-2018, QC301_26-4-2018, QC302_26-4-2018, QC401_26-4-2018	**26-Apr-2018**	**02-May-2018**	23-Oct-2018	✓	**02-May-2018**	23-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA026_25-4-2018	**26-Apr-2018**	**03-May-2018**	23-Oct-2018	✓	**03-May-2018**	23-Oct-2018	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-LL) SA014_25-4-2018, LPTA_25-4-2018, APT_25-4-2018, QC101_25-4-2018, QC102_25-4-2018, QC103_25-4-2018	**25-Apr-2018**	**02-May-2018**	22-Oct-2018	✓	**02-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA091_25-4-2018, SA093_25-4-2018, SA009_25-4-2018, SA027_25-4-2018, SA351_25-4-2018, SA107_25-4-2018, SA349_25-4-2018, SA038_25-4-2018, SA041_25-4-2018, SA037_25-4-2018, SA036_25-4-2018, SA39_25-4-2018, SA350_25-4-2018, SA110_25-4-2018, SA017_25-4-2018, SA020_25-4-2018, SA013_25-4-2018, SA012_25-4-2018, SA015_25-4-2018	**25-Apr-2018**	**03-May-2018**	22-Oct-2018	✓	**03-May-2018**	22-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) TWD_26-4-2018, QC301_26-4-2018, QC302_26-4-2018, QC401_26-4-2018	**26-Apr-2018**	**02-May-2018**	23-Oct-2018	✓	**02-May-2018**	23-Oct-2018	✓
HDPE (no PTFE) (EP231X-LL) SA026_25-4-2018	**26-Apr-2018**	**03-May-2018**	23-Oct-2018	✓	**03-May-2018**	23-Oct-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	3	30	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1810440**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: gwhitmore@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 18100235	Page	: 1 of 3
Order number	: PO10249	Quote number	: EB2018GOLASS0004 (BN/112/18)
C-O-C number	: COC #3	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project Sam		
Sampler	: EMMA CORNISH		

Dates

Date Samples Received	: 27-Apr-2018 09:45	Issue Date	: 30-Apr-2018
Client Requested Due Date	: 04-May-2018	Scheduled Reporting Date	: **04-May-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 15.2, 17.5°C - Ice present
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 30 / 30

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample "SA39_25-4-2018" (ALS #13) was received labelled as "SA039_25-4-2018".**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Samples "QC201_25-4-2018", "QC202_25-4-2018", "QC203_25-4-2018", "QC2041_24-4-2018", "QC205_24-4-2018" and "QC206_24-4-2018" will be forwarded to Eurofins, as requested. Please note that this will include a freight forwarding fee.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

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	*Client sampling date / time*	*Client sample ID*	WATER - EP231X-LL (EB) PFAS - Full Suite Low Level (28 analytes)
EB1810440-001	25-Apr-2018 00:00	SA091_25-4-2018	✓
EB1810440-002	25-Apr-2018 00:00	SA093_25-4-2018	✓
EB1810440-003	26-Apr-2018 00:00	SA026_25-4-2018	✓
EB1810440-004	25-Apr-2018 00:00	SA009_25-4-2018	✓
EB1810440-005	25-Apr-2018 00:00	SA027_25-4-2018	✓
EB1810440-006	25-Apr-2018 00:00	SA351_25-4-2018	✓
EB1810440-007	25-Apr-2018 00:00	SA107_25-4-2018	✓
EB1810440-008	25-Apr-2018 00:00	SA349_25-4-2018	✓
EB1810440-009	25-Apr-2018 00:00	SA038_25-4-2018	✓
EB1810440-010	25-Apr-2018 00:00	SA041_25-4-2018	✓
EB1810440-011	25-Apr-2018 00:00	SA037_25-4-2018	✓
EB1810440-012	25-Apr-2018 00:00	SA036_25-4-2018	✓
EB1810440-013	25-Apr-2018 00:00	SA39_25-4-2018	✓
EB1810440-014	25-Apr-2018 00:00	SA350_25-4-2018	✓
EB1810440-015	25-Apr-2018 00:00	SA110_25-4-2018	✓
EB1810440-016	25-Apr-2018 00:00	SA017_25-4-2018	✓
EB1810440-017	25-Apr-2018 00:00	SA020_25-4-2018	✓
EB1810440-018	25-Apr-2018 00:00	SA013_25-4-2018	✓
EB1810440-019	25-Apr-2018 00:00	SA012_25-4-2018	✓
EB1810440-020	25-Apr-2018 00:00	SA015_25-4-2018	✓
EB1810440-021	25-Apr-2018 00:00	SA014_25-4-2018	✓
EB1810440-022	26-Apr-2018 00:00	TWD_26-4-2018	✓
EB1810440-023	25-Apr-2018 00:00	LPTA_25-4-2018	✓
EB1810440-024	25-Apr-2018 00:00	APT_25-4-2018	✓
EB1810440-025	25-Apr-2018 00:00	QC101_25-4-2018	✓
EB1810440-026	25-Apr-2018 00:00	QC102_25-4-2018	✓
EB1810440-027	25-Apr-2018 00:00	QC103_25-4-2018	✓
EB1810440-028	26-Apr-2018 00:00	QC301_26-4-2018	✓
EB1810440-029	26-Apr-2018 00:00	QC302_26-4-2018	✓
EB1810440-030	26-Apr-2018 00:00	QC401_26-4-2018	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

GREG WHITMORE

- *AU Certificate of Analysis - NATA (COA)	Email	gwhitmore@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gwhitmore@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gwhitmore@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gwhitmore@golder.com.au
- Chain of Custody (CoC) (COC)	Email	gwhitmore@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	gwhitmore@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	gwhitmore@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	gwhitmore@golder.com.au

COC #3

1 OF 3

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

ALS / Brisbane

BN 112 938

PO 102 IT

GOLDER ASSOCIATES PTY LTD

GOLDER

PDF ■ EXCEL ■ EDIT ■ ENVIROVIEW ■

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No. OF CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) Low Level (EP231A-LL)	PFAS - Super Trace Long Suite (28 analytes) (EP231X-ST)	Comments
1	SA091_25-4-2018		25/04/2018		Water	1 - 5	Unknown	X		
2	SA093_25-4-2018		25/04/2018		Water	1	Unknown	X		
3	SA026_25-4-2018		26/4/18		Water	1	Unknown	X		
4	SA089_25-4-2018		25/04/2018		Water	1	Unknown	X		
5	SA027_25-4-2018		25/04/2018		Water	1	Unknown	X		
6	SA351_25-4-2018		25/04/2018		Water	1	Unknown	X		
7	SA107_25-4-2018		25/04/2018		Water	1	Unknown	X		
8	SA349_25-4-2018		25/04/2018		Water	1	Unknown	X		
9	SA038_25-4-2018		25/04/2018		Water	1	Unknown	X		
10	SA041_25-4-2018		25/04/2018		Water	1	Unknown	X		

Environmental Division
Brisbane
Work Order Reference
EB1810440

Telephone : +61-7-3243 7222

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY				
RECEIVED BY	Quillard	ALS	27/4/18	9:45
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER(S) LABORATORY ON RECEIPT OF SAMPLES.

COC #3

2 OF 3

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Special Containers (See Sampler Guidance)	PFAS - Full Suite (28) Drinking Water Low Level (EP231X-LL)	PFAS – Super Trace Long Suite (26 analytes) (EP231X-ST)	Comments
11	SA027_25-4-2018		25/04/2018		Water	1	Unknown	X		
12	SA036_25-4-2018		25/04/2018		Water	1	Unknown	X		
13	SA39_25-4-2018		25/04/2018		Water	1	Unknown	X		
14	SA350_25-4-2018		25/04/2018		Water	1	Unknown	X		
15	SA130_25-4-2018		25/04/2018		Water	1	Unknown	X		
16	SA017_25-4-2018		25/04/2018		Water	1	Unknown	X		
17	SA020_25-4-2018		25/04/2018		Water	1	Unknown	X		
18	SA013_25-4-2018		25/04/2018		Water	1	Unknown	X		
19	SA012_25-4-2018		25/04/2018		Water	1	Unknown	X		
20	SA015_25-4-2018		25/04/2018		Water	1	Unknown	X		

	SIGN / PRINT	COMPANY	DATE	TIME
RELEASED BY	E-Cornish	GOLDER	26/4/18	10.00
RECEIVED BY	J Hilling	JH	27/4/18	9.05
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

COC #3

3 OF 3

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Lab ID	Sample ID	Sample Depth	Sample Date	Sample Type	Sample Matrix	No. Containers	Special Comments/Analytical Requirements	PFAS - Full Suite (28 Analytes; Low Level (EP233)(-LL)	PFAS – Supra Trace Long Suite (28 analytes) (EP233)(X-ST)
21	SA014_25-4-2018		25/04/2018		Water	1	Unknown	X	
22	TWD_26-4-2018		26/4/18 ~~25/04/2018~~		Water	1	Unknown	X	
23	LPTA_25-4-2018		25/04/2018		Water	1	Unknown	X	
24	APT_25-4-2018		25/04/2018		Water	1	Unknown	X	
25	QC101_25-4-2018		25/04/2018		Water	1	Unknown	X	
26	QC102_25-4-2018		25/04/2018		Water	1	Unknown	X	
27	QC103_25-4-2018		25/04/2018		Water	1	Unknown	X	
28	QC301_26-4-2018		26/04/2018		Water	1	Unknown	X	
29	QC302_26-4-2018		26/04/2018		Water	1	Unknown	X	
30	QC401_26-4-18		26/4/18		Water	1		X	

	SIGNATURE	COMPANY	DATE	TIME
RELINQUISHED BY:	E Corish	GOLDER	26/4/18	10:00
RECEIVED BY:	D Williams	ALS	27/4/18	9:45
RELINQUISHED BY:				
RECEIVED BY:				
RELINQUISHED BY:				
RECEIVED BY:				

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIERS; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1817464**	Page	: 1 of 29
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 14-Jun-2018 12:06
Order number	: 18100235	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 22-Jun-2018 14:51
Sampler	: ----		
Site	: PROJECT SAM		
Quote number	: BN/112/18		
No. of samples received	: 67		
No. of samples analysed	: 61		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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.

- EP231: Matrix spike recovery bias low due to sample matrix interferences

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	EWHEQ-MW-01	EWHEQ-MW-02	EWHEQ-MW-03	EWHEQ-MW-04	EWHEQ-MW-05
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
					ES1817464-001	ES1817464-002	ES1817464-003	ES1817464-004	ES1817464-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0008**	**0.0046**	**0.0022**	**0.0008**	**0.0074**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0007**	**0.0040**	**0.0019**	**0.0005**	**0.0085**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0102**	**0.0384**	**0.0158**	**0.0045**	**0.0862**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0005**	**0.0022**	**0.0010**	<0.0005	**0.0055**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0049**	**0.0329**	**0.0171**	**0.0041**	**0.156**
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	0.002	µg/L		<0.002	**0.002**	**0.002**	**0.004**	**0.018**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0107**	**0.0086**	**0.0089**	**0.172**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0111**	**0.0078**	**0.0048**	**0.155**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0034**	**0.0023**	**0.0014**	**0.0895**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0019**	**0.0011**	<0.0005	**0.0112**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0010**
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)				Client sample ID	EWHEQ-MW-01	EWHEQ-MW-02	EWHEQ-MW-03	EWHEQ-MW-04	EWHEQ-MW-05
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-001	ES1817464-002	ES1817464-003	ES1817464-004	ES1817464-005
					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	**0.005**	**0.003**	**0.028**	**0.020**
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 PFAS	----	0.0003	µg/L		**0.0171**	**0.116**	**0.0628**	**0.0570**	**0.730**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0151**	**0.0713**	**0.0329**	**0.0086**	**0.242**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0159**	**0.110**	**0.0599**	**0.0565**	**0.715**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**81.9**	**77.6**	**61.8**	**71.2**	**61.6**
13C8-PFOA	----	0.0005	%		**117**	**115**	**93.3**	**76.5**	**93.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	HOS-SA/254	HOS-SA/2	HOS-SA/4	HOS-SA/249	LDP-MW-10
				Client sampling date / time	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-006	ES1817464-007	ES1817464-008	ES1817464-009	ES1817464-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0011**	<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	**0.0090**	**0.0007**	**0.0072**	**0.0026**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		<0.0003	**0.0149**	<0.0003	**0.0058**	**0.0018**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	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	**0.0033**	<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
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0009**	<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)				Client sample ID	HOS-SA/254	HOS-SA/2	HOS-SA/4	HOS-SA/249	LDP-MW-10
				Client sampling date / time	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-006	ES1817464-007	ES1817464-008	ES1817464-009	ES1817464-010
					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		**0.001**	<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 PFAS	----	0.0003	µg/L		**0.0010**	**0.0298**	**0.0007**	**0.0135**	**0.0044**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	**0.0239**	**0.0007**	**0.0130**	**0.0044**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0010**	**0.0292**	**0.0007**	**0.0135**	**0.0044**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**83.0**	**65.5**	**60.7**	**70.1**	**74.3**
13C8-PFOA	----	0.0005	%		**96.5**	**72.7**	**85.0**	**106**	**96.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LDP-MW-13	LDP-MW-34	LPI-MW-08	LPI-MW-20	LPI-MW-21
				Client sampling date / time	03-Jun-2018 00:00	03-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-011	ES1817464-012	ES1817464-013	ES1817464-014	ES1817464-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0006**	**0.0009**	**0.179**	**0.0015**	**0.0390**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0007**	**0.211**	**0.0014**	**0.0574**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0049**	**0.0107**	**1.50**	**0.0229**	**0.439**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	**0.131**	**0.0011**	**0.0315**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0056**	**0.0148**	**2.00**	**0.0421**	**0.696**
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	0.002	µg/L		<0.002	<0.002	**0.026**	<0.002	**0.014**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	**0.0961**	**0.0013**	**0.0297**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0014**	**0.339**	**0.0044**	**0.108**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0013**	**0.0972**	**0.0033**	**0.0504**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0020**	**0.156**	**0.0033**	**0.0631**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	**0.0050**	<0.0005	**0.0021**
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)				Client sample ID	LDP-MW-13	LDP-MW-34	LPI-MW-08	LPI-MW-20	LPI-MW-21
				Client sampling date / time	03-Jun-2018 00:00	03-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-011	ES1817464-012	ES1817464-013	ES1817464-014	ES1817464-015
					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	**0.017**	<0.001	**0.007**
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 PFAS	----	0.0003	µg/L		**0.0111**	**0.0324**	**4.76**	**0.0813**	**1.54**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0105**	**0.0255**	**3.50**	**0.0650**	**1.14**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0111**	**0.0311**	**4.41**	**0.0788**	**1.45**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**67.0**	**64.5**	**61.0**	**77.8**	**76.2**
13C8-PFOA	----	0.0005	%		**109**	**87.5**	**68.1**	**103**	**78.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LPI-MW-22	RMW-MW-01	RMW-MW-02	RMW-MW-04	RMW-MW-05
				Client sampling date / time	09-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-016	ES1817464-017	ES1817464-018	ES1817464-019	ES1817464-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0009**	**0.0072**	**0.0006**	**0.0012**	**0.0008**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0006**	**0.0084**	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0091**	**0.126**	**0.0018**	**0.0024**	**0.0041**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0069**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0086**	**0.152**	**0.0014**	**0.0013**	**0.0024**
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	0.002	µg/L		<0.002	**0.016**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.131**	**0.0014**	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0006**	**0.143**	**0.0012**	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0743**	**0.0006**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0014**	**0.0157**	**0.0006**	<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)				Client sample ID	LPI-MW-22	RMW-MW-01	RMW-MW-02	RMW-MW-04	RMW-MW-05
				Client sampling date / time	09-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-016	ES1817464-017	ES1817464-018	ES1817464-019	ES1817464-020
					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	**0.074**	<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 PFAS	----	0.0003	µg/L		**0.0212**	**0.754**	**0.0076**	**0.0049**	**0.0073**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0177**	**0.278**	**0.0032**	**0.0037**	**0.0065**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0206**	**0.739**	**0.0076**	**0.0049**	**0.0073**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**62.6**	**66.2**	**70.1**	**67.0**	**60.9**
13C8-PFOA	----	0.0005	%		**100**	**109**	**73.3**	**90.7**	**73.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC111	QC112	QC114	QC115	AFD-MW-21
				Client sampling date / time	04-Jun-2018 00:00	05-Jun-2018 00:00	09-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-022	ES1817464-023	ES1817464-025	ES1817464-026	ES1817464-027
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0008**	**0.0421**	**0.0014**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0008**	**0.0603**	**0.0013**	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0028**	**0.0209**	**0.534**	**0.0214**	**0.0021**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	**0.0292**	**0.0010**	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0022**	**0.0308**	**0.970**	**0.0352**	**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	0.002	µg/L		<0.002	**0.006**	**0.009**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0132**	**0.0322**	**0.0014**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0139**	**0.118**	**0.0051**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0113**	**0.0572**	**0.0026**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0057**	**0.0665**	**0.0030**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0012**	**0.0026**	<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)				Client sample ID	QC111	QC112	QC114	QC115	AFD-MW-21
				Client sampling date / time	04-Jun-2018 00:00	05-Jun-2018 00:00	09-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-022	ES1817464-023	ES1817464-025	ES1817464-026	ES1817464-027
					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	**0.007**	<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 PFAS	----	0.0003	µg/L		**0.0050**	**0.105**	**1.93**	**0.0724**	**0.0033**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0050**	**0.0517**	**1.50**	**0.0566**	**0.0033**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0050**	**0.103**	**1.84**	**0.0701**	**0.0033**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**62.7**	**61.1**	**68.6**	**63.6**	**61.1**
13C8-PFOA	----	0.0005	%		**77.4**	**86.2**	**76.5**	**89.7**	**74.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	AFD-MW-22	AFD-MW-36	AHEQ-MW-01	AHEQ-MW-02	AHEQ-MW-03
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
					ES1817464-028	ES1817464-029	ES1817464-030	ES1817464-031	ES1817464-032
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0012**	**0.0061**	<0.0005	**0.0005**	**0.0023**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0007**	**0.0051**	<0.0005	<0.0005	**0.0022**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0048**	**0.0349**	**0.0028**	**0.0087**	**0.0257**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0007**	<0.0005	<0.0005	**0.0010**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0004**	**0.0115**	**0.0020**	**0.0078**	**0.0252**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0.002**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0022**	**0.0130**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0046**	**0.0009**	**0.0044**	**0.0211**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0010**	<0.0005	**0.0018**	**0.0068**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0015**	<0.0005	**0.0010**	**0.0030**
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)				Client sample ID	AFD-MW-22	AFD-MW-36	AHEQ-MW-01	AHEQ-MW-02	AHEQ-MW-03
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-028	ES1817464-029	ES1817464-030	ES1817464-031	ES1817464-032
					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	**0.005**	<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 PFAS	----	0.0003	µg/L		**0.0071**	**0.0664**	**0.0057**	**0.0314**	**0.102**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0052**	**0.0464**	**0.0048**	**0.0165**	**0.0509**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0064**	**0.0606**	**0.0057**	**0.0314**	**0.0991**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**61.0**	**60.0**	**66.1**	**72.2**	**60.5**
13C8-PFOA	----	0.0005	%		**71.8**	**79.5**	**87.9**	**96.9**	**95.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AHEQ-MW-05	AHEQ-MW-06	ASB-MW-07	ASB-MW-08	ASB-MW-10
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	07-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-033	ES1817464-034	ES1817464-035	ES1817464-036	ES1817464-037
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0016**	**0.0042**	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0015**	**0.0039**	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0240**	**0.0464**	<0.0005	**0.0008**	**0.0012**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0009**	**0.0015**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0233**	**0.0312**	**0.0007**	**0.0009**	**0.0014**
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	0.002	µg/L		**0.010**	**0.004**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0610**	**0.0154**	<0.0005	<0.0005	**0.0014**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0504**	**0.0182**	<0.0005	<0.0005	**0.0009**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0272**	**0.0086**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0029**	**0.0022**	<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)				Client sample ID	AHEQ-MW-05	AHEQ-MW-06	ASB-MW-07	ASB-MW-08	ASB-MW-10
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	07-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-033	ES1817464-034	ES1817464-035	ES1817464-036	ES1817464-037
					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 PFAS	----	0.0003	µg/L		**0.203**	**0.136**	**0.0007**	**0.0017**	**0.0049**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0473**	**0.0776**	**0.0007**	**0.0017**	**0.0026**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.200**	**0.130**	**0.0007**	**0.0017**	**0.0049**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**66.7**	**78.6**	**60.6**	**61.8**	**82.4**
13C8-PFOA	----	0.0005	%		**92.8**	**89.3**	**78.5**	**82.6**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	ASB-MW-16	ASB-MW-21	ASB-MW-23	BRP-MW-01	BRP-MW-02
				Client sampling date / time	07-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	03-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-038	ES1817464-039	ES1817464-040	ES1817464-041	ES1817464-042
					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	**0.0029**	**0.0017**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0017**	**0.0008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.0012**	**0.0011**	**0.0073**	**0.0044**
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	0.0003	µg/L		**0.0005**	**0.0013**	**0.0019**	**0.0057**	**0.0023**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0276**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0012**	**0.0143**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0031**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0011**	**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: WATER (Matrix: WATER)				Client sample ID	ASB-MW-16	ASB-MW-21	ASB-MW-23	BRP-MW-01	BRP-MW-02
				Client sampling date / time	07-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	03-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-038	ES1817464-039	ES1817464-040	ES1817464-041	ES1817464-042
					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 PFAS	----	0.0003	µg/L		**0.0005**	**0.0025**	**0.0030**	**0.0199**	**0.0551**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0005**	**0.0025**	**0.0030**	**0.0130**	**0.0067**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0005**	**0.0025**	**0.0030**	**0.0182**	**0.0543**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**63.5**	**74.0**	**82.1**	**76.8**	**80.6**
13C8-PFOA	----	0.0005	%		**83.8**	**105**	**114**	**109**	**104**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	BRP-MW-03	ELN-MW-02	ELN-MW-04	ELN-MW-07	ELN-MW-06
				Client sampling date / time	03-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00
					ES1817464-043	ES1817464-044	ES1817464-045	ES1817464-046	ES1817464-047
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0006**	**0.0010**	<0.0005	**0.0019**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0010**	<0.0005	**0.0020**	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0018**	**0.0203**	<0.0005	**0.0378**	**0.0005**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	<0.0005	**0.0014**	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0010**	**0.0459**	<0.0003	**0.0748**	**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	0.002	µg/L		<0.002	**0.006**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0015**	**0.0170**	<0.0005	**0.0088**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0009**	**0.0141**	<0.0005	**0.0079**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0103**	<0.0005	**0.0057**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0068**	<0.0005	**0.0045**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0020**	<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)				Client sample ID	BRP-MW-03	ELN-MW-02	ELN-MW-04	ELN-MW-07	ELN-MW-06
				Client sampling date / time	03-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-043	ES1817464-044	ES1817464-045	ES1817464-046	ES1817464-047
					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 PFAS	----	0.0003	µg/L		**0.0058**	**0.125**	<0.0003	**0.145**	**0.0009**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0028**	**0.0662**	<0.0003	**0.113**	**0.0009**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0058**	**0.121**	<0.0003	**0.141**	**0.0009**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**67.7**	**78.9**	**76.3**	**83.6**	**77.5**
13C8-PFOA	----	0.0005	%		**109**	**102**	**109**	**109**	**113**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	ELN-MW-30	ELS-RW-1	ELS-MW-18	ELS-MW-19	ELS-MW-24
				Client sampling date / time	04-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
					ES1817464-048	ES1817464-049	ES1817464-050	ES1817464-051	ES1817464-052
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0061**	**0.0080**	**0.0055**	**0.0064**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0094**	**0.0121**	**0.0045**	**0.0047**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.113**	**0.257**	**0.0766**	**0.0584**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0049**	**0.0092**	**0.0034**	**0.0024**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		<0.0003	**0.234**	**0.453**	**0.156**	**0.0712**
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	0.002	µg/L		<0.002	**0.009**	**0.014**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0430**	**0.0413**	**0.0153**	**0.0034**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0458**	**0.0494**	**0.0194**	**0.0053**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0164**	**0.0201**	**0.0083**	**0.0032**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0122**	**0.0178**	**0.0078**	**0.0035**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0013**	**0.0017**	**0.0006**	<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)				Client sample ID	ELN-MW-30	ELS-RW-1	ELS-MW-18	ELS-MW-19	ELS-MW-24
				Client sampling date / time	04-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-048	ES1817464-049	ES1817464-050	ES1817464-051	ES1817464-052
					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 PFAS	----	0.0003	µg/L		<0.0003	**0.495**	**0.884**	**0.297**	**0.158**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	**0.347**	**0.710**	**0.233**	**0.130**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	**0.480**	**0.861**	**0.289**	**0.151**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**64.2**	**78.9**	**78.5**	**71.4**	**80.5**
13C8-PFOA	----	0.0005	%		**78.2**	**111**	**109**	**107**	**113**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	ELS-MW-23	ELS-MW-20	RWW-MW-03	QC410	QC411
				Client sampling date / time	02-Jun-2018 00:00	02-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00	03-Jun-2018 00:00
					ES1817464-053	ES1817464-054	ES1817464-055	ES1817464-057	ES1817464-058
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0024**	**0.0110**	**0.0010**	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0023**	**0.0131**	**0.0006**	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0284**	**0.120**	**0.0044**	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0011**	**0.0066**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0467**	**0.266**	**0.0021**	<0.0003	<0.0003
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	0.002	µg/L		<0.002	**0.009**	**0.005**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0006**	**0.0223**	**0.0328**	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0011**	**0.0334**	**0.0148**	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0010**	**0.0116**	**0.0034**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0015**	**0.0107**	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0010**	<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)				Client sample ID	ELS-MW-23	ELS-MW-20	RWW-MW-03	QC410	QC411
				Client sampling date / time	02-Jun-2018 00:00	02-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-053	ES1817464-054	ES1817464-055	ES1817464-057	ES1817464-058
					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 PFAS	----	0.0003	µg/L		**0.0851**	**0.505**	**0.0641**	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0751**	**0.386**	**0.0065**	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0817**	**0.484**	**0.0635**	<0.0003	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**83.5**	**78.1**	**83.4**	**76.3**	**73.4**
13C8-PFOA	----	0.0005	%		**116**	**109**	**108**	**102**	**101**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	QC310	QC313	QC314	QC315	QC319
				Client sampling date / time	02-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	09-Jun-2018 00:00
					ES1817464-059	ES1817464-062	ES1817464-063	ES1817464-064	ES1817464-068
					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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	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
Perfluoroheptanoic acid (PFHpA)	375-85-9	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	Client sample ID	QC310	QC313	QC314	QC315	QC319
				Client sampling date / time	02-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	09-Jun-2018 00:00
					ES1817464-059	ES1817464-062	ES1817464-063	ES1817464-064	ES1817464-068
					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 PFAS	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**81.0**	**89.5**	**80.7**	**90.2**	**86.5**
13C8-PFOA	----	0.0005	%		**101**	**101**	**98.6**	**101**	**96.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC110	----	----	----	----
				Client sampling date / time	09-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1817464-069	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0011**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0010**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0136**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0007**	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0359**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L		<0.002	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0009**	----	----	----	----
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)				Client sample ID	QC110	----	----	----	----
				Client sampling date / time	09-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1817464-069	--------	--------	--------	--------
					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 PFAS	----	0.0003	µg/L		**0.0532**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0495**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0515**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**72.8**	----	----	----	----
13C8-PFOA	----	0.0005	%		**100**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1810434**	Page	: 1 of 21
Client	: **GOLDER ABBOCIATEB**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 14-Jun-2018
Order number	: 18100235	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 22-Jun-2018
Sampler	: ----		
Site	: PROJECT SAM		
Quote number	: BN/112/18		
No. of samples received	: 67		
No. of samples analysed	: 61		

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. 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*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0049	0.0046	7.13	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0008	0.0008	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0007	0.0006	14.9	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0102	0.0095	7.72	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0056	0.0055	0.00	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0006	0.0006	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0049	0.0038	25.0	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10224259									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10224259) continued									
ES1817464-018	RMW-MW-02	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0014	0.0013	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0018	0.0021	16.2	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0020	0.0019	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0028	0.0022	23.8	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10236259									
ES1817464-039	ASB-MW-21	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0013	0.0013	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0012	0.0011	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.234	0.281	18.2	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0061	0.0079	25.4	0% - 50%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10236279) continued									
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0094	0.0104	10.3	0% - 20%
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.113	0.122	7.83	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0049	0.0067	30.5	0% - 50%
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0044	0.0040	9.07	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0016	0.0016	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224S69) continued									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0014	0.0013	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0012	0.0013	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0009	0.0010	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224259) continued									
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 102362S9									
ES1817464-039	ASB-MW-21	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0430	0.0445	3.38	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0458	0.0476	3.90	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0164	0.0192	15.6	0% - 20%
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0122	0.0140	13.9	0% - 20%
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	0.0013	0.0018	28.6	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	0.009	0.013	39.8	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10236279) continued									
EP1807150-017	Anonymous	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0015	0.0017	11.0	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0024	0.0024	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0009	0.0010	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0016	0.0016	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10224S69) continued									
ES1817464-011	LDP-MW-13	EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 102362S9									
ES1817464-039	ASB-MW-21	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 1023625) continued									
ES1817464-039	ASB-MW-21	EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10236279) continued									
ES1817387-008	Anonymous	EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10224259) continued									
ES1817464-030	AHEQ-MW-01	EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10236259									
ES1817464-039	ASB-MW-21	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	0.002	0.002	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21P: PFAB Bums (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0171	0.0155	9.82	0% - 20%
ES1817464-011	LDP-MW-13	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0111	0.0099	11.4	0% - 20%
EPS21P: PFAB Bums (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0076	0.0081	6.37	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21P: PFAB Bums (QC Lot: 10224259) continued									
ES1817464-030	AHEQ-MW-01	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0057	0.0051	11.1	0% - 50%
EPS21P: PFAB Bums (QC Lot: 102362S9									
ES1817464-039	ASB-MW-21	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0025	0.0024	4.08	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.495	0.568	13.7	0% - 20%
EPS21P: PFAB Bums (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0144	0.0148	2.74	0% - 20%

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224S69								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	78.0	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	75.8	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	69.8	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	86.2	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	74.4	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	80.6	50	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224259								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	82.8	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	95.4	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	82.8	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	96.6	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	85.6	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	89.8	50	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 102362S9								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	111	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	110	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	105	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	102	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	88.2	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	56.0	50	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10236279								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	112	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	117	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	109	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	110	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	102	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	56.8	50	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224S69								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	55.0	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	78.4	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	85.2	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	75.2	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	87.2	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	74.2	50	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224S69) continued								
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	56.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	40.8	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	49.8	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	42.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	40.5	40	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224259								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	54.4	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	80.0	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	94.6	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	76.2	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	96.6	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	83.2	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	73.4	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	46.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	40.4	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	43.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	52.6	40	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236259								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	58.2	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	112	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	118	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	118	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	114	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	104	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	74.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	58.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	56.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	53.2	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	77.4	40	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236279								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	63.0	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	117	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	125	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	119	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	120	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	103	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	80.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	73.2	40	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236279) continued								
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	60.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	57.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	80.5	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224S69								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	75.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	43.1	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	40.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	52.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	44.9	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	60.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	40.8	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224259								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	69.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	66.5	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	44.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	56.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	86.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	73.6	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	57.4	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10236259								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	72.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	80.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	72.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	81.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	74.6	40	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 102362S9) continued								
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	53.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	50.8	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10236279								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	74.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	75.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	68.7	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	71.3	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	67.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	55.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	51.8	40	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224S69								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	81.0	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	89.2	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	82.8	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	69.6	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224259								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	88.4	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	96.0	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	111	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	89.0	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 102362S9								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	119	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	126	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	103	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	54.2	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10236279								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	118	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	124	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	111	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	62.4	50	130
EPS21P: PFAB Bums (QCLot: 10224S69								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21P: PFAB Bums (QCLot: 10224S69) continued								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EPS21P: PFAB Bums (QCLot: 10224259								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EPS21P: PFAB Bums (QCLot: 102362S9								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EPS21P: PFAB Bums (QCLot: 10236279								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	66.6	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	57.2	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	56.2	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	72.6	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	51.0	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	52.2	30	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	68.6	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	71.2	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	94.2	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	71.0	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	56.6	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	66.4	30	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 102362S9							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	98.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	93.8	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	85.6	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	98.2	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	86.2	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	48.6	30	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10236279							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10236279) continued							
ES1817387-001	Anonymous	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	92.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	108	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	85.0	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	92.4	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	80.6	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	46.8	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	# 16.0	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	64.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	70.0	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	84.6	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	83.0	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	61.8	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	63.2	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	75.4	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	33.4	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	32.6	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	36.3	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	45.0	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	68.4	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	85.0	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	94.0	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	82.0	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	66.6	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	54.6	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	71.0	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	44.8	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	46.8	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	48.6	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 102362S9							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	47.5	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	94.4	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	106	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	100	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	112	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	98.2	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	72.6	50	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 102362S9) continued							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	53.6	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	53.6	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	45.2	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	60.2	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236279							
ES1817387-001	Anonymous	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	46.6	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	81.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	123	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	103	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	105	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	92.8	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	66.8	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	61.2	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	59.0	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	46.0	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	57.4	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	59.4	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	41.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	45.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	54.3	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	68.1	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	52.0	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	62.4	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	59.0	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	75.0	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	63.0	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	60.8	30	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224259) continued							
ES1817464-019	RMW-MW-04	EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	61.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	85.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	99.0	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 102362S9							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	72.6	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	69.9	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	61.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	64.5	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	66.5	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	49.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	47.0	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10236279							
ES1817387-001	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	62.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	53.7	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	48.7	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	53.5	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	53.4	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	47.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	40.0	30	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	78.4	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	56.8	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	107	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	59.0	50	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	72.8	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	116	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	115	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	79.2	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10236259							
ES1817464-040	ASB-MW-23	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	112	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	118	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	108	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	63.6	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10236279							
ES1817387-001	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	116	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	120	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	111	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	52.0	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1817464**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 14-Jun-2018
Site	: PROJECT SAM	Issue Date	: 22-Jun-2018
Sampler	: ----	No. of samples received	: 67
Order number	: 18100235	No. of samples analysed	: 61

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	ES1817464--002	EWHEQ-MW-02	**Perfluorobutanoic acid (PFBA)**	375-22-4	16.0 %	30-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
Clear Plastic Bottle - Natural (EP231X-ST)							
ASB-MW-23	**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-05	**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELS-RW-1, ELS-MW-18, ELS-MW-19, ELS-MW-24, ELS-MW-23, ELS-MW-20, QC410, QC310	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
LDP-MW-10, LDP-MW-13, LDP-MW-34	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
BRP-MW-01, BRP-MW-02, BRP-MW-03, QC411	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC111	**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELN-MW-02, ELN-MW-04, ELN-MW-07, ELN-MW-06, ELN-MW-30	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
HOS-SA/254, HOS-SA/2, HOS-SA/4, HOS-SA/249, RMW-MW-01	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
RMW-MW-04,	QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RWW-MW-03,	QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
EWHEQ-MW-01,	EWHEQ-MW-02,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
EWHEQ-MW-03,	EWHEQ-MW-04,							
EWHEQ-MW-05								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-02,	QC115,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
AFD-MW-21,	AFD-MW-22,							
AFD-MW-36,	AHEQ-MW-01,							
AHEQ-MW-02,	AHEQ-MW-03,							
AHEQ-MW-05,	AHEQ-MW-06							
HDPE (no PTFE) (EP231X-ST)								
QC314,	QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-07,	ASB-MW-10,	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
ASB-MW-16								
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-21		**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-08		**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
LPI-MW-08,	LPI-MW-20,	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
LPI-MW-21,	LPI-MW-22							
HDPE (no PTFE) (EP231X-ST)								
QC114		**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC319,	QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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							
Clear Plastic Bottle - Natural (EP231X-ST)							
ASB-MW-23	**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-05	**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELS-RW-1, ELS-MW-18, ELS-MW-19, ELS-MW-24, ELS-MW-23, ELS-MW-20, QC410, QC310	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
LDP-MW-10, LDP-MW-13, LDP-MW-34	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
BRP-MW-01, BRP-MW-02, BRP-MW-03, QC411	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC111	**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELN-MW-02, ELN-MW-04, ELN-MW-07, ELN-MW-06, ELN-MW-30	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
HOS-SA/254, HOS-SA/2, HOS-SA/4, HOS-SA/249, RMW-MW-01	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-04, QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RWW-MW-03, QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
EWHEQ-MW-01, EWHEQ-MW-02, EWHEQ-MW-03, EWHEQ-MW-04, EWHEQ-MW-05	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-02, QC115, AFD-MW-21, AFD-MW-22, AFD-MW-36, AHEQ-MW-01, AHEQ-MW-02, AHEQ-MW-03, AHEQ-MW-05, AHEQ-MW-06	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC314, QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ASB-MW-07, ASB-MW-10, ASB-MW-16	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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							
Clear Plastic Bottle - Natural (EP231X-ST)							
ASB-MW-23	**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-05	**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELS-RW-1, ELS-MW-18, ELS-MW-19, ELS-MW-24, ELS-MW-23, ELS-MW-20, QC410, QC310	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
LDP-MW-10, LDP-MW-13, LDP-MW-34	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
BRP-MW-01, BRP-MW-02, BRP-MW-03, QC411	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC111	**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELN-MW-02, ELN-MW-04, ELN-MW-07, ELN-MW-06, ELN-MW-30	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
HOS-SA/254, HOS-SA/2, HOS-SA/4, HOS-SA/249, RMW-MW-01	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-04, QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RWW-MW-03, QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
EWHEQ-MW-01, EWHEQ-MW-02, EWHEQ-MW-03, EWHEQ-MW-04, EWHEQ-MW-05	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-02, QC115, AFD-MW-21, AFD-MW-22, AFD-MW-36, AHEQ-MW-01, AHEQ-MW-02, AHEQ-MW-03, AHEQ-MW-05, AHEQ-MW-06	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC314, QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ASB-MW-07, ASB-MW-10, ASB-MW-16	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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								
Clear Plastic Bottle - Natural (EP231X-ST)								
ASB-MW-23		**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-05		**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELS-RW-1,	ELS-MW-18,	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
ELS-MW-19,	ELS-MW-24,							
ELS-MW-23,	ELS-MW-20,							
QC410,	QC310							
HDPE (no PTFE) (EP231X-ST)								
LDP-MW-10,	LDP-MW-13,	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
LDP-MW-34								
HDPE (no PTFE) (EP231X-ST)								
BRP-MW-01,	BRP-MW-02,	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
BRP-MW-03,	QC411							
HDPE (no PTFE) (EP231X-ST)								
QC111		**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELN-MW-02,	ELN-MW-04,	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
ELN-MW-07,	ELN-MW-06,							
ELN-MW-30								
HDPE (no PTFE) (EP231X-ST)								
HOS-SA/254,	HOS-SA/2,	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HOS-SA/4,	HOS-SA/249,							
RMW-MW-01								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-04,	QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RWW-MW-03,	QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
EWHEQ-MW-01,	EWHEQ-MW-02,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
EWHEQ-MW-03,	EWHEQ-MW-04,							
EWHEQ-MW-05								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-02,	QC115,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
AFD-MW-21,	AFD-MW-22,							
AFD-MW-36,	AHEQ-MW-01,							
AHEQ-MW-02,	AHEQ-MW-03,							
AHEQ-MW-05,	AHEQ-MW-06							
HDPE (no PTFE) (EP231X-ST)								
QC314,	QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-07,	ASB-MW-10,	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
ASB-MW-16								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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								
Clear Plastic Bottle - Natural (EP231X-ST)								
ASB-MW-23		**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-05		**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELS-RW-1,	ELS-MW-18,	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
ELS-MW-19,	ELS-MW-24,							
ELS-MW-23,	ELS-MW-20,							
QC410,	QC310							
HDPE (no PTFE) (EP231X-ST)								
LDP-MW-10,	LDP-MW-13,	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
LDP-MW-34								
HDPE (no PTFE) (EP231X-ST)								
BRP-MW-01,	BRP-MW-02,	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
BRP-MW-03,	QC411							
HDPE (no PTFE) (EP231X-ST)								
QC111		**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELN-MW-02,	ELN-MW-04,	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
ELN-MW-07,	ELN-MW-06,							
ELN-MW-30								
HDPE (no PTFE) (EP231X-ST)								
HOS-SA/254,	HOS-SA/2,	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HOS-SA/4,	HOS-SA/249,							
RMW-MW-01								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-04,	QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RWW-MW-03,	QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
EWHEQ-MW-01,	EWHEQ-MW-02,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
EWHEQ-MW-03,	EWHEQ-MW-04,							
EWHEQ-MW-05								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-02,	QC115,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
AFD-MW-21,	AFD-MW-22,							
AFD-MW-36,	AHEQ-MW-01,							
AHEQ-MW-02,	AHEQ-MW-03,							
AHEQ-MW-05,	AHEQ-MW-06							
HDPE (no PTFE) (EP231X-ST)								
QC314,	QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-07,	ASB-MW-10,	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
ASB-MW-16								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	8	75	**10.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	4	75	**5.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	4	75	**5.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	4	75	**5.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction and LC-Electrospray-MS-MS, Negative Mode using MRM. This method is targetted to pristine environmental and drinking waters reportin at sub-parts per trillion. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1817464**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: gwhitmore@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 18100235	Page	: 1 of 4
Order number	: 18100235	Quote number	: EB2018GOLASS0004 (BN/112/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PROJECT SAM		
Sampler	:		

Dates

Date Samples Received	: 14-Jun-2018 12:06	Issue Date	: 19-Jun-2018
Client Requested Due Date	: 21-Jun-2018	Scheduled Reporting Date	: **21-Jun-2018**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 3	Temperature	: 5'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 67 / 61

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC214, QC215 and QC113 have been forwarded to Eurofins.**
- **QC210 (formerly QC110) was sent to Eurofins for analysis.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.

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	*Client sampling date / time*	*Client sample ID*	(On Hold) WATER No analysis requested	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
ES1817464-001	06-Jun-2018 00:00	EWHEQ-MW-01		✓
ES1817464-002	06-Jun-2018 00:00	EWHEQ-MW-02		✓
ES1817464-003	06-Jun-2018 00:00	EWHEQ-MW-03		✓
ES1817464-004	06-Jun-2018 00:00	EWHEQ-MW-04		✓
ES1817464-005	06-Jun-2018 00:00	EWHEQ-MW-05		✓
ES1817464-006	05-Jun-2018 00:00	HOS-SA/254		✓
ES1817464-007	05-Jun-2018 00:00	HOS-SA/2		✓
ES1817464-008	05-Jun-2018 00:00	HOS-SA/4		✓
ES1817464-009	05-Jun-2018 00:00	HOS-SA/249		✓
ES1817464-010	03-Jun-2018 00:00	LDP-MW-10		✓
ES1817464-011	03-Jun-2018 00:00	LDP-MW-13		✓
ES1817464-012	03-Jun-2018 00:00	LDP-MW-34		✓
ES1817464-013	09-Jun-2018 00:00	LPI-MW-08		✓
ES1817464-014	09-Jun-2018 00:00	LPI-MW-20		✓
ES1817464-015	09-Jun-2018 00:00	LPI-MW-21		✓
ES1817464-016	09-Jun-2018 00:00	LPI-MW-22		✓
ES1817464-017	05-Jun-2018 00:00	RMW-MW-01		✓
ES1817464-018	06-Jun-2018 00:00	RMW-MW-02		✓
ES1817464-019	05-Jun-2018 00:00	RMW-MW-04		✓
ES1817464-020	02-Jun-2018 00:00	RMW-MW-05		✓
ES1817464-022	04-Jun-2018 00:00	QC111		✓
ES1817464-023	05-Jun-2018 00:00	QC112		✓
ES1817464-025	09-Jun-2018 00:00	QC114		✓
ES1817464-026	06-Jun-2018 00:00	QC115		✓
ES1817464-027	06-Jun-2018 00:00	AFD-MW-21		✓
ES1817464-028	06-Jun-2018 00:00	AFD-MW-22		✓
ES1817464-029	06-Jun-2018 00:00	AFD-MW-36		✓
ES1817464-030	06-Jun-2018 00:00	AHEQ-MW-01		✓
ES1817464-031	06-Jun-2018 00:00	AHEQ-MW-02		✓
ES1817464-032	06-Jun-2018 00:00	AHEQ-MW-03		✓
ES1817464-033	06-Jun-2018 00:00	AHEQ-MW-05		✓
ES1817464-034	06-Jun-2018 00:00	AHEQ-MW-06		✓
ES1817464-035	07-Jun-2018 00:00	ASB-MW-07		✓
ES1817464-036	08-Jun-2018 00:00	ASB-MW-08		✓
ES1817464-037	07-Jun-2018 00:00	ASB-MW-10		✓

			(On Hold) WATER No analysis requested	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
ES1817464-038	07-Jun-2018 00:00	ASB-MW-16		✓
ES1817464-039	07-Jun-2018 00:00	ASB-MW-21		✓
ES1817464-040	08-Jun-2018 00:00	ASB-MW-23		✓
ES1817464-041	03-Jun-2018 00:00	BRP-MW-01		✓
ES1817464-042	03-Jun-2018 00:00	BRP-MW-02		✓
ES1817464-043	03-Jun-2018 00:00	BRP-MW-03		✓
ES1817464-044	04-Jun-2018 00:00	ELN-MW-02		✓
ES1817464-045	04-Jun-2018 00:00	ELN-MW-04		✓
ES1817464-046	04-Jun-2018 00:00	ELN-MW-07		✓
ES1817464-047	04-Jun-2018 00:00	ELN-MW-06		✓
ES1817464-048	04-Jun-2018 00:00	ELN-MW-30		✓
ES1817464-049	02-Jun-2018 00:00	ELS-RW-1		✓
ES1817464-050	02-Jun-2018 00:00	ELS-MW-18		✓
ES1817464-051	02-Jun-2018 00:00	ELS-MW-19		✓
ES1817464-052	02-Jun-2018 00:00	ELS-MW-24		✓
ES1817464-053	02-Jun-2018 00:00	ELS-MW-23		✓
ES1817464-054	02-Jun-2018 00:00	ELS-MW-20		✓
ES1817464-055	05-Jun-2018 00:00	RWW-MW-03		✓
ES1817464-056	08-Jun-2018 00:00	ASB-MW-22	✓	
ES1817464-057	02-Jun-2018 00:00	QC410		✓
ES1817464-058	03-Jun-2018 00:00	QC411		✓
ES1817464-059	02-Jun-2018 00:00	QC310		✓
ES1817464-060	03-Jun-2018 00:00	QC311	✓	
ES1817464-061	04-Jun-2018 00:00	QC312	✓	
ES1817464-062	05-Jun-2018 00:00	QC313		✓
ES1817464-063	06-Jun-2018 00:00	QC314		✓
ES1817464-064	06-Jun-2018 00:00	QC315		✓
ES1817464-065	07-Jun-2018 00:00	QC316	✓	
ES1817464-066	08-Jun-2018 00:00	QC317	✓	
ES1817464-067	08-Jun-2018 00:00	QC318	✓	
ES1817464-068	09-Jun-2018 00:00	QC319		✓
ES1817464-069	09-Jun-2018 00:00	QC110		✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

DARCY SIMPSON

- *AU Certificate of Analysis - NATA (COA)	Email	dasimpson@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	dasimpson@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	dasimpson@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	dasimpson@golder.com.au
- Chain of Custody (CoC) (COC)	Email	dasimpson@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	dasimpson@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	dasimpson@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	dasimpson@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

GREG WHITMORE

- *AU Certificate of Analysis - NATA (COA)	Email	gwhitmore@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gwhitmore@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gwhitmore@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gwhitmore@golder.com.au
- Chain of Custody (CoC) (COC)	Email	gwhitmore@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	gwhitmore@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	gwhitmore@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	gwhitmore@golder.com.au

Sheet 1 of 5

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

PO#	18100235	Phone:	Lab Name: ALS - Brisbane
Site/ID No.:	SAM	Site Location: KTA Weipa - various sites	Quote No.: EN/002/16V2
Sampled By:			Order No.: EN/112/18
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ■		Stafford QLD 4053 AUSTRALIA
	3days ☐ 5 Days ☐ Date Required By:		
Delivery Option	HARD ☐ FAX ☐ DISK ☐ EMAIL ■ BULLETIN BOARD ☐		
Report Format	PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■		

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Gene Whitmore
Lab Contact: Stacey Simpson
Phone: 07 40549200
Fax: 07 40549201
Reviewed:
Phone: 0412323826 Email:

Golder Associatess

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS – Super Trace Long Suite (28 Analytes) (ALS Method Code FP231X-ST)	Comments
1	EWHEQ- MW-01	-PS-	060618	6.6.18	W			X	
2	EWHEQ- MW-02	-PS-	↓	↓	↓			↓	
3	EWHEQ- MW-03	-PS-							
4	EWHEQ- MW-04	-PS-							
5	EWHEQ- MW-05	-PS-							
6	HOS- SA/254	-PS-	050618	5.6.18	W				
7	HOS- ~~MW-8~~ SA/2	-PS-	↓	↓	↓				
8	HOS- SA/4	-PS-							
9	HOS- SA/249	-PS-							
10	LPD- MW-10	-PS-	030618	3.6.18	W				
11	LPD- MW-13	-PS-	↓	↓	↓				
12	LPD- MW-34	-PS-							
13	LPI- MW-08	-PS-	090618	9.6.18	W				
14	LPI- MW-20	-PS-	↓	↓	↓				
15	LPI- MW-21	-PS-							
16	LPI- MW-22	-PS-							

Environmental Division
Sydney
Work Order Reference
ES1817464

Telephone : + 61-2-8784 8555

SAMPLE MATRIX – soil/Sediment/Fill/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(DC)/Grab(GR)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11.6.18	0930
RECEIVED BY		ALS	13/6/18	1315
RELEASED BY		ALS	14/6/18	1206
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal: (NM)
Condition/Temperature: Chilled / Frozen / Ambient
Cool Ice: SC

JB 13/6 (3-5)

RL3
SH7004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Project No:	18100235	Phase:		Lab Name:	ALS - Brisbane
Site ID No.:	SAM	Site Location:	RTA Weipa - various sites	Quote No.:	EN/002/16V2
Sampled By:				Order No.:	BN312/18
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ■ 24hrs ☐ 5 Days ☐ Date Required By:				Stafford QLD 4053 AUSTRALIA
Delivery Option:	HARD ☐ FAX ☐ DISK ☐ EMAIL ■ BULLETIN BOARD ☐				
Report Format:	PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■				

GOLDER ASSOCIATES PTY LTD
Phone: 07 40548200
Golder Associates
216 Draper St, Cairns, 4870
Fax: 07 40548201
Project Manager: Greg Wallance
Reviewed:
Job Contact: Davey Simpson
Phone: 0412322426 Email:

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS – Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-SD1)															Comments
17	RWW- MW-01	-PS-	050618	5.6.18	W			X															
19	RWW- MW-02	-PS-	060618	6.6.18	↓			↓															
20	RWW- MW-04	-PS-	050618	5.6.18	↓			↓															
21	RWW- MW-05	-PS-	↓	↓				X															
22	QC110	-PS-	020618	2.6.18				X															
23	QC111	-PS-	030618	3.6.18				X															
24	QC112	-PS-	040618	4.6.18				X															
25	QC113	-PS-	050618	5.6.18					HOLD														
26	QC114	-PS-	090618	9.6.18				X															
	QC115 ~~QC116~~	-PS-	090618	9.6.18				X															
	~~QC111~~	~~-PS-~~																					

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle suspected parameters on analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11.6.18	0930
RECEIVED BY		AL	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Sheet 3 of 5

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Phone:		Lab Name:	ALS - Brisbane
Site ID No.:	SAM	Site Location:	RTA Weipa - various sites	Quote No.:	EN/002/16V2
Sampled By:				Order No.:	BN/112/18
Turnaround Time:	24hrs ☐	48hrs ☐	Standard ■	Date Required By:	Stafford QLD 4053 AUSTRALIA
	36hrs ☐	5 Days ☐			
Delivery Options:	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format:	PDF ■	EXCEL ■		ESDAT ■	ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD
724 Draper St, Cairns, 4870
Project Manager: Greg Wehbeee
Job Contact: Davey Simpson
Phone: 07 40548200
Fax: 07 40548201
Reference:
Phone: 0412312826 Email:
dsimpson@golder.com.au, gwehbeee@golder.com.au, weipa@golder.com.au

Golder Associatess

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID		SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS - Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-ST)	Comments
27	AFD- MW-21	-PS-	060618	W			X	
	~~AFD- MW-35~~	~~-PS-~~	—	—				
28	AFD- MW-22	-PS-	060618	W				
29	AFD- MW-36	-PS-	"	"				
30	AHEQ- MW-01	-PS-	"	"				
31	AHEQ- MW-02	-PS-	"	"				
32	AHEQ- MW-03	-PS-	"	"				
	~~AHEQ- MW-04~~	~~-PS-~~	—	—				
33	AHEQ- MW-05	-PS-	060618	W				
34	AHEQ- MW-06	-PS-	"	"				
35	ASB- MW-7	-PS-	090618	W				
36	ASB- MW-8	-PS-	080618	W				
37	ASB- MW-10	-PS-	070618	W				
38	ASB- MW-16	-PS-	070618	W				
39	ASB- MW-21	-PS-	070618	W				
40	ASB- MW-23	-PS-	080618	W				

SAMPLE MATRIX – Soil/Sediment/Fill/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameter in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11-6-18	0930
RECEIVED BY		ALS	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal: (N/A)
Suitable Containers: SC
Cool Pack:

Chilled
Frozen
Ambient

ALS BATCH NUMBER

Bottles
Address

3-5

RTS
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

4/5

Project No:	18100235	PO No.:		Lab Name:	ALS - Brisbane
Site ID:	SAM	SM Location:	KTA Weipa - various sites	Quote No.:	EN082/16V2
Sampled By:				Order No.:	BN/112/18
Turnaround Time:	24hrs ☐	48hrs ☐	Standard ■	Report To:	Stafford QLD 4053 AUSTRALIA
	36hrs ☐	5 Days ☐	Date Required By:		
Results Format:	HARD ☐ FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐	
Report Format:	PDF ■	EXCEL ■	ESDAT ■	ENVIROSYS ■	

GOLDER ASSOCIATES PTY LTD
214 Draper St, Cairns, 4870
Project Manager: Greg Wilmore
Lab Contact: Penny Simpson
Phone: 07 40548200
Fax: 07 40548201
Retrieval:
Phone: 0412327826 Email:
dgrimmond@golder.com.au; greg-wilmore@golder.com.au; penny@golder.com.au

Golder Associates

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID		SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS – Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-ST)	Comments
01	BRP- MW-01	-PS- 030618	3-6-18	W			X	
02	BRP- MW-02	-PS-	↓	↓	↓		↓	
03	BRP- MW-03	-PS-	↓	↓	↓		↓	
04	ELN- MW-02	-PS- 040618	4-6-18	W				
05	ELN- MW-04	-PS-	↓	↓	↓			
06	ELN- MW-~~05~~07	-PS-						
07	ELN- MW-06	-PS-						
08	ELN- MW-30	-PS-	↓	↓	↓			
09	ELS- RW-1	-PS- 020618	2-6-18	W				
10	ELS- MW-18	-PS-	↓	↓	↓			
11	ELS- MW-19	-PS-						
12	ELS- MW-24	-PS-						
13	ELS- MW-~~26~~ 23	-PS-						
14	ELS- MW-~~28~~ 20	-PS-	↓	↓	↓		↓	

SAMPLE MATRIX – Soil/Sediment/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(D)/Disturbed(DS)/Core(CE), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11-6-18	0930
RECEIVED BY		XCI	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

3-5

Sheet 5 of 5

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	PO No:		Lab:	ALS - Brisbane
Job/ID No:	SAM	Site Location:	KIA Weipa - various sites	Lab Ref No:	EN002/16V2
Sampled By:		Quote No:		Quote Ref:	BN/112/18
Turnaround Time	24hrs ☐ 36hrs ☐	48hrs ☐ 5 Days ☐	Standard ■ Date Required By:		Stafford QLD 4053 AUSTRALIA
Delivery Options	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■	EXCEL ■	ESDAT ■	ENVIROSYS ■	

GOLDER ASSOCIATES PTY LTD
210 Draper St, Cairns, 4870
Phone: 07 40548200
Fax: 07 40548201
Project Manager: Geer Whitmore
Reviewed:
Job Contact: Darcy Hayman
Phone: 0412 128 C6 Email: darcy.hayman@golder.com.au
geer.whitmore@golder.com.au
cairns@golder.com.au

Golder Associatess

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PBAS – Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-ST)																					Comments
54	RWW-MW03	PS	050618	5·6·18	W			X			IN ERROR PLEASE TEST																
56	ASB-MW22	PS	080618	8·6·18	W			—	HOLD																		
57	QC 410	PS	020618	2·6·18	W			[illegible]																			
58	QC 411	PS	030618	3·6·18	W																						
59	QC 310		020618	2·6·18				—	HOLD																		
60	QC 311		030618	3·6·18				—	HOLD																		
61	QC 312		040618	4·6·18				—	HOLD																		
62	QC 313		050618	5·6·18				—	HOLD																		
63	QC 314		060618	6·6·18				—	HOLD																		
64	QC 315		060618	6·6·18				—	HOLD																		
65	QC 316		070618	7·6·18				—	HOLD																		
66	QC 317		080618	8·6·18				—	HOLD																		
67	QC 318		080618	8·6·18					HOLD																		
68	QC 319		090618	9·6·18				—	HOLD																		

SAMPLE MATRIX – Soil, Sediment, Fill, Water, Other

SAMPLE TYPE – Composite (C), Discrete (DC), Discarded (DS), Core (CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in sample list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11·6·18	0930
RECEIVED BY		ALS	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal: NA

Condition / Temperature

Cool Box: SC

Labels

Bottles

Ambient

3-5

ALS SNT004 Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet 1 of 1

Project No:	18100335	Project:		Lab Name:	Eurofins
Site ID No.:	SAM	Site Location:	RTA Weipa - various sites	Quote No.:	
Sampled By:				Order No.:	
Turnaround Time	24hrs ☐		48hrs ☐	Standard ■	Stafford QLD 4053 AUSTRALIA
	36hrs ☐		3 Days ☐	Date Required By:	
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■		EXCEL ■	ESDAT ■	ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD
216 Bruce St, Cairns, 4870
Project Manager: Greg Whitmore
Job Contact: Barry Stenson
Phone: 07 40548200
Fax: 07 40548201
Reviewed:
Phone: 0437217820 Email:
Golder Associates
dstenson@golder.com.au
gwhitmore@golder.com.au
cairns@golder.com.au

Comments/Special Instructions: PLEASE FORWARD TO EUROFINS BRISBANE.

ANALYSIS REQUIRED

LAB ID	SAMPLE ID		SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	Perfluorooctanesulfonic acid (PFOS) Ultra Trace	Comments
	QC210	~~FS~~	020618	2·618	W	1	X	
	~~QC211~~	~~FS~~						
	~~QC212~~	~~FS~~						
	~~QC213~~	~~FS~~						
	QC214	FS	090618	9·6·18	W	1	X	
	QC215		090618	9·6·18	W	1	X	

13-6-18 COPY COC

SENT

SAMPLE MATRIX – Soil/Sediment/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(D)/Disturbed(DS)/Cute(CE), Grab Sample (GS)

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11·6·18	0930
RECEIVED BY		AES	14/6/18	1200
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

HIGH CONCENTRATION: circle expected parameter in analysis list

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal	N/A		Chilled		Bill to:
Suitable Containers			Frozen		Address:
Cool Box	SS		Ambient		

3-5

XL3
SW706d
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER'S; LABORATORY ON RECEIPT OF SAMPLES.

Fadi Soro

From: ALSEnviro Brisbane
Sent: Monday, 18 June 2018 4:54 PM
To: Samples Sydney
Cc: Andrew Epps
Subject: FW: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hello,

Can you please add analysis and updates as per below? Can you please confirm once this is complete and I will let the client know.

Regards

Caroline Hill
Client Services, Environmental
Brisbane

T +61 7 3243 7222 D +61 7 3552 8662
Caroline.Hill@ALSGlobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053 AUSTRALIA

Subscribe

Environmental Division
Sydney
Work Order Reference
ES1817464

Telephone : +61-2-8784 8555

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EnviroMail™ 120 – Microtox Toxicity Test
EnviroMail™ 119 – ALS NATA Accreditation now extends to PFAS in Biota

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From: Cornish, Emma [mailto:ECornish@golder.com.au]
Sent: Monday, 18 June 2018 3:51 PM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Cc: Avril Stephens <Avril.Stephens@alsglobal.com>; Simpson, Darcy <DASimpson@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Can we also analyse the following samples analysed for EP231X-ST;

ES1817464-062	QC313
ES1817464-063	QC314
ES1817464-064	QC315
ES1817464-068	QC319

In addition on the lab certifications can we please change the site to Project Sam.

Please provide an updated SRN with changes request in this email and the email below.

Kind regards,
Emma

From: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Sent: Monday, 18 June 2018 2:18 PM
To: Cornish, Emma <ECornish@golder.com.au>
Cc: Avril Stephens <Avril.Stephens@alsglobal.com>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Emma,

ALS Sydney have the QC210 sample and will add the analysis as requested you should get an updated SRN shortly.

Regards,

John Pickering
Client Services, Environmental - Brisbane



T +61 7 3243 7222 D +61 7 3552 8634
john.pickering@alsglobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053
AUSTRALIA



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From: Cornish, Emma <ECornish@golder.com.au>
Sent: Monday, 18 June 2018 11:47 AM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Yes we have contacted Eurofins.

Can you please analyse QC210 which ALS has currently, as QC110 as per the COC. Send an updated SRN.

Kind regards,
Emma

From: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Sent: Monday, 18 June 2018 11:44 AM
To: Cornish, Emma <ECornish@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Emma,

Eurofins has sample QC210 you will need to contact them for analysis.

EQUAL ■ ENVIROSYS ■

PLEASE FORWARD TO EUROFINS BRISBANE.

SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No. CONTAINERS	Level of Contamination (Low/Med/Unknown)	Perfluorooctanesulfonic acid (PFOS) Ultra Trace
QC210	PS-	020618	2·6·18	W	1		X
~~QC211~~	~~PS-~~						
~~QC212~~	~~PS-~~						
~~QC213~~	~~PS-~~						
QC214	PS-	090618	9·6·18	W	1		X
QC215		090618	9·6·18	W	1		X

Regards,

John Pickering
Client Services, Environmental - Brisbane

T +61 7 3243 7222 D +61 7 3552 8634
john.pickering@alsglobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053
AUSTRALIA

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EnviroMail™ 120 – Microtox Toxicity Test
EnviroMail™ 119 – ALS NATA Accreditation now extends to PFAS in Biota
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From: Cornish, Emma <ECornish@golder.com.au>
Sent: Monday, 18 June 2018 10:59 AM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Subject: FW: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

HI,

Can you please help for the below.

Kind regards,
Emma

From: Cornish, Emma
Sent: Monday, 18 June 2018 10:57 AM
To: 'Andrew Epps' <Andrew.Epps@alsglobal.com>; Simpson, Darcy <DASimpson@golder.com.au>
Cc: Whitmore, Greg <GWhitmore@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Can you please analyse QC210 as QC110 as per the COC. Send an updated SRN.

We have confirmed that eurofins has QC110.

Kind regards,
Emma

From: Andrew Epps <Andrew.Epps@alsglobal.com>
Sent: Friday, 15 June 2018 4:06 PM
To: Simpson, Darcy <DASimpson@golder.com.au>
Cc: Cornish, Emma <ECornish@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Darcy,

As discussed, Sydney have received a QC210 sample and have not received a QC110 sample for this same WO (see attached COC). As per your instruction we'll hold off on analysing this one until we receive clarification from you on Monday.

Regards,

Andrew Epps
Client Services, Environmental
Brisbane

T +61 7 3243 7222 D +61 7 3552 8639
Andrew.Epps@alsglobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053

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From: ALSEnviro Brisbane
Sent: Friday, 15 June 2018 3:45 PM
To: 'Cornish, Emma' <ECornish@golder.com.au>
Cc: Whitmore, Greg <GWhitmore@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Emma,

I have spoken to Sydney and they should be able to forward this one on for you.

Let me know if I can help with anything further.

Regards,

Andrew Epps
Client Services, Environmental
Brisbane

T +61 7 3243 7222 D +61 7 3552 8639
Andrew.Epps@alsglobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053

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EnviroMail™ 119 – ALS NATA Accreditation now extends to PFAS in Biota
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From: Cornish, Emma [mailto:ECornish@golder.com.au]
Sent: Friday, 15 June 2018 1:06 PM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Cc: Whitmore, Greg <GWhitmore@golder.com.au>
Subject: FW: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Can I get lab sample ES1817464-024 with field ID QC113 sent to Eurofins with the attached COC.

Kind regards,
Emma

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Friday, 15 June 2018 12:20 PM
To: Cornish, Emma <ECornish@golder.com.au>
Subject: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

ALS Environmental

Deliverables for ALS Workorder ES1817464

Project: 18100235

Dear EMMA CORNISH,

Please find enclosed the following deliverables for **ES1817464**:

- ES1817464_COC.pdf

Report Recipients

- GREG WHITMORE
  - ES1817464_COC.pdf (Email)
- DARCY SIMPSON
  - ES1817464_COC.pdf (Email)
- EMMA CORNISH
  - ES1817464_COC.pdf (Email)
- GREG WHITMORE
  - ES1817464_COC.pdf (Email)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1816377**	Page	: 1 of 17
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 4724 0311	Telephone	: +61-7-3243 7222
Project	: 18100235 Phase 4000/700	Date Samples Received	: 06-Jul-2018 09:50
Order number	: 18100235	Date Analysis Commenced	: 11-Jul-2018
C-O-C number	: ----	Issue Date	: 18-Jul-2018 11:09
Sampler	: EMMA CORNISH		
Site	: ----		
Quote number	: BN/112/18		
No. of samples received	: 35		
No. of samples analysed	: 34		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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 analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Amendment (18/07/2018): This report has been amended as a result of a change sample identification numbers (IDs) to reflect the COC. All analysis results are as per the previous report.
- EP231: Particular samples required dilution due to sample matrix . LOR values have been adjusted accordingly.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SA017_20180702	SA020_20180702	SA014_20180702	LPTA_20180702	SA015_20180702
				Client sampling date / time	02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	03-Jul-2018 00:00
					EB1816377-001	EB1816377-002	EB1816377-003	EB1816377-004	EB1816377-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0015**	**0.0013**	**0.0009**	**0.0012**	**0.0007**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0011**	**0.0009**	**0.0008**	**0.0010**	**0.0005**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0083**	**0.0071**	**0.0067**	**0.0065**	**0.0041**
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	0.0003	µg/L		**0.0032**	**0.0033**	**0.0049**	**0.0031**	**0.0037**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0007**	**0.0007**	**0.0007**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0008**	**0.0011**	**0.0009**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	**0.0007**	<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)				Client sample ID	SA017_20180702	SA020_20180702	SA014_20180702	LPTA_20180702	SA015_20180702
				Client sampling date / time	02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	03-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1816377-001	EB1816377-002	EB1816377-003	EB1816377-004	EB1816377-005
					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 PFAS	----	0.0003	µg/L		**0.0141**	**0.0141**	**0.0158**	**0.0134**	**0.0090**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0115**	**0.0104**	**0.0116**	**0.0096**	**0.0078**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0130**	**0.0132**	**0.0150**	**0.0124**	**0.0085**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**87.6**	**100**	**97.4**	**101**	**102**
13C8-PFOA	----	0.0005	%		**90.9**	**102**	**86.7**	**105**	**99.6**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	SA013_20180703	LPI-MW13_20180703	LPI-MW19_20180703	LPI-MW11_20180703	LPI-MW12_20180703
				Client sampling date / time	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00
					EB1816377-006	EB1816377-007	EB1816377-008	EB1816377-009	EB1816377-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0013**	**0.0011**	**0.0023**	**0.0159**	**0.0187**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0012**	**0.0013**	**0.0023**	**0.0207**	**0.0284**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0054**	**0.0088**	**0.0165**	**0.301**	**0.295**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	**0.0009**	**0.0326**	**0.0384**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0036**	**0.0141**	**0.0174**	**1.80**	**1.48**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0010**	<0.0005	<0.0005	**0.0128**	**0.0145**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0018**	**0.0015**	**0.0018**	**0.0617**	**0.0716**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0005**	<0.0005	<0.0005	**0.0130**	**0.0159**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0018**	**0.0023**	**0.0210**	**0.0256**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0008**	**0.0006**
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	Client sample ID	SA013_20180703	LPI-MW13_20180703	LPI-MW19_20180703	LPI-MW11_20180703	LPI-MW12_20180703
				Client sampling date / time	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00
					EB1816377-006	**EB1816377-007**	**EB1816377-008**	**EB1816377-009**	**EB1816377-010**
					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		<0.001	<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 PFAS	----	0.0003	µg/L		**0.0148**	**0.0292**	**0.0435**	**2.28**	**1.99**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0090**	**0.0229**	**0.0339**	**2.10**	**1.78**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0136**	**0.0273**	**0.0403**	**2.22**	**1.92**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**86.1**	**110**	**97.6**	**96.3**	**98.4**
13C8-PFOA	----	0.0005	%		**87.9**	**107**	**96.3**	**112**	**106**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC116_20180703	QC320_20180703	QC412_20180703	QC321_20180704	QC117_20180704
				Client sampling date / time	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1816377-011	EB1816377-012	EB1816377-013	EB1816377-015	EB1816377-016
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0006**	<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	<0.0005	<0.0005	**0.0016**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0034**	**0.0003**	<0.0003	<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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0023**
Perfluorohexanoic acid (PFHxA)	307-24-4	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
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)				Client sample ID	QC116_20180703	QC320_20180703	QC412_20180703	QC321_20180704	QC117_20180704
				Client sampling date / time	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1816377-011	EB1816377-012	EB1816377-013	EB1816377-015	EB1816377-016
					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 PFAS	----	0.0003	µg/L		**0.0079**	**0.0003**	<0.0003	<0.0003	**0.0049**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0068**	**0.0003**	<0.0003	<0.0003	**0.0026**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0074**	**0.0003**	<0.0003	<0.0003	**0.0049**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**87.0**	**90.6**	**92.4**	**100**	**91.6**
13C8-PFOA	----	0.0005	%		**83.0**	**92.1**	**91.4**	**101**	**114**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	PR/AND/DOS_20180704	SW/BEN/DOS_20180704	EMB/EV/NSA_20180704	EMB/EV/NSB_20180704	EMB/EV/NSC_20180704
				Client sampling date / time	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00
					EB1816377-017	EB1816377-018	EB1816377-019	EB1816377-020	EB1816377-021
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0006**	<0.0005	<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	**0.0027**	<0.0005	**0.0012**	**0.0006**
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	0.0003	µg/L		**0.0003**	**0.0011**	<0.0003	**0.0011**	**0.0008**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0013**	<0.0005	**0.0006**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	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
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	Client sample ID	PR/AND/DOS_20180704	SW/BEN/DOS_20180704	EMB/EV/NSA_20180704	EMB/EV/NSB_20180704	EMB/EV/NSC_20180704
				Client sampling date / time	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00
					EB1816377-017	EB1816377-018	EB1816377-019	EB1816377-020	EB1816377-021
					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 PFAS	----	0.0003	µg/L		**0.0003**	**0.0057**	<0.0003	**0.0029**	**0.0014**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0003**	**0.0038**	<0.0003	**0.0023**	**0.0014**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0003**	**0.0057**	<0.0003	**0.0029**	**0.0014**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**77.9**	**95.2**	**79.3**	**92.0**	**79.5**
13C8-PFOA	----	0.0005	%		**107**	**117**	**106**	**114**	**109**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	EMB/LP/NSA_20180704	EMB/LP/NSB_20180704	EMB/LP/NSC_20180704	MRC/DOS__20180704	PR/EWM/WP/DOS_20180704
				Client sampling date / time	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00
					EB1816377-022	EB1816377-023	EB1816377-024	EB1816377-025	EB1816377-026
					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	<0.0020
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0014**	**0.0298**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0007**	<0.0005	<0.0005	<0.0020
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		<0.0003	**0.0007**	**0.0004**	**0.0009**	**0.0272**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0005**	**0.0046**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0674**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0114**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0022**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0050
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	EMB/LP/NSA_20180704	EMB/LP/NSB_20180704	EMB/LP/NSC_20180704	MRC/DOS__20180704	PR/EWM/WP/DOS_20180704
				Client sampling date / time	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB1816377-022	EB1816377-023	EB1816377-024	EB1816377-025	EB1816377-026
					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	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
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	**0.795**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	**0.039**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	<0.001	<0.001	<0.001	**0.022**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0003	µg/L		<0.0003	**0.0014**	**0.0004**	**0.0028**	**0.999**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	**0.0007**	**0.0004**	**0.0023**	**0.0570**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	**0.0007**	**0.0004**	**0.0028**	**0.977**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**76.2**	**81.5**	**79.6**	**94.0**	**74.0**
13C8-PFOA	----	0.0005	%		**106**	**98.0**	**89.2**	**102**	**62.0**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	LPI_MW24_20180704	LPI_MW15_20180704	LPI_MW17_20180704	LPI_MW7_20180705	LPI_MW1_20180705
				Client sampling date / time	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
					EB1816377-027	EB1816377-028	EB1816377-029	EB1816377-030	EB1816377-031
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0077**	**0.0333**	**0.0024**	**0.0988**	**0.0990**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0062**	**0.0451**	**0.0019**	**0.141**	**0.156**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0409**	**0.448**	**0.0279**	**1.04**	**0.983**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0012**	**0.0266**	**0.0015**	**0.0845**	**0.104**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0161**	**0.635**	**0.0135**	**1.61**	**2.15**
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	0.002	µg/L		<0.002	**0.004**	**0.011**	**0.009**	**0.017**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0240**	<0.0005	**0.0527**	**0.0697**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0021**	**0.0655**	<0.0005	**0.163**	**0.176**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0343**	<0.0005	**0.0861**	**0.0898**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0011**	**0.0274**	<0.0005	**0.0906**	**0.108**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0007**	<0.0005	**0.0029**	**0.0027**
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	Client sample ID	LPI_MW24_20180704	LPI_MW15_20180704	LPI_MW17_20180704	LPI_MW7_20180705	LPI_MW1_20180705
				Client sampling date / time	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
					EB1816377-027	EB1816377-028	EB1816377-029	EB1816377-030	EB1816377-031
					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	**0.003**	<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 PFAS	----	0.0003	µg/L		**0.0753**	**1.34**	**0.0582**	**3.38**	**3.96**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0570**	**1.08**	**0.0414**	**2.65**	**3.13**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0679**	**1.27**	**0.0548**	**3.15**	**3.69**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**91.8**	**102**	**96.3**	**102**	**89.7**
13C8-PFOA	----	0.0005	%		**95.5**	**102**	**105**	**99.7**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LPI_MW4_20180705	LPI_MW16_20180705	SA012_20180705	LP1_MW5_20180705	----
				Client sampling date / time	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1816377-032	EB1816377-033	EB1816377-034	EB1816377-035	--------
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.100**	**0.0414**	**0.0017**	**0.0515**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.145**	**0.0639**	**0.0013**	**0.0776**	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.894**	**0.545**	**0.0096**	**0.600**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0856**	**0.0628**	**0.0005**	**0.0429**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**1.95**	**1.60**	**0.0056**	**1.25**	----
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	0.002	µg/L		**0.015**	**0.008**	<0.002	**0.007**	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0653**	**0.0362**	**0.0020**	**0.0321**	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.182**	**0.103**	**0.0018**	**0.0905**	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0812**	**0.0830**	**0.0010**	**0.0526**	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0989**	**0.0747**	<0.0005	**0.0494**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		**0.0043**	**0.0023**	<0.0005	**0.0018**	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<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	----
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: WATER (Matrix: WATER)				Client sample ID	LPI_MW4_20180705	LPI_MW16_20180705	SA012_20180705	LP1_MW5_20180705	----
				Client sampling date / time	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EB1816377-032	EB1816377-033	EB1816377-034	EB1816377-035	--------
					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	**0.006**	<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	----
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 PFAS	----	0.0003	µg/L		**3.62**	**2.63**	**0.0235**	**2.26**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**2.84**	**2.14**	**0.0152**	**1.85**	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**3.39**	**2.50**	**0.0217**	**2.13**	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**89.4**	**106**	**106**	**90.4**	----
13C8-PFOA	----	0.0005	%		**106**	**110**	**113**	**103**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1816377**	Page	: 1 of 14
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 4724 0311	Telephone	: +61-7-3243 7222
Project	: 18100235 Phase 4000/700	Date Samples Received	: 06-Jul-2018
Order number	: 18100235	Date Analysis Commenced	: 11-Jul-2018
C-O-C number	: ----	Issue Date	: 18-Jul-2018
Sampler	: EMMA CORNISH		
Site	: ----		
Quote number	: BN/112/18		
No. of samples received	: 35		
No. of samples analysed	: 34		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1791139)									
EB1816377-001	SA017_20180702	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0032	0.0034	4.26	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0015	0.0015	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0011	0.0011	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0083	0.0076	8.30	0% - 50%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EB1816377-012	QC320_20180703	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0003	<0.0003	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1791141)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1791141) - continued									
EB1816377-021	EMB/EV/NSC_20180704	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0008	0.0008	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EB1816377-031	LPI_MW1_20180705	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	2.15	2.27	5.23	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0990	0.109	9.87	0% - 20%
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.156	0.164	4.74	0% - 20%
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.983	1.09	10.00	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.104	0.124	17.3	0% - 20%
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1797255)									
EB1816377-011	QC116_20180703	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0034	0.0031	9.17	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0005	0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0034	0.0029	16.0	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1791139)									
EB1816377-001	SA017_20180702	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1791139) - continued									
EB1816377-001	SA017_20180702	EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1816377-012	QC320_20180703	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1791141)									
EB1816377-021	EMB/EV/NSC_20180704	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1816377-031	LPI_MW1_20180705	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0697	0.0741	6.18	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.176	0.198	11.7	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0898	0.102	12.5	0% - 20%
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.108	0.123	13.4	0% - 20%
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	0.0027	0.0029	5.67	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1791141) - continued									
EB1816377-031	LPI_MW1_20180705	EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	0.017	0.018	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1797255)									
EB1816377-011	QC116_20180703	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1791139)									
EB1816377-001	SA017_20180702	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1816377-012	QC320_20180703	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1791139) - continued									
EB1816377-012	QC320_20180703	EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1791141)									
EB1816377-021	EMB/EV/NSC_20180704	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1816377-031	LPI_MW1_20180705	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1797255)									
EB1816377-011	QC116_20180703	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1797255) - continued									
EB1816377-011	QC116_20180703	EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1791139)									
EB1816377-001	SA017_20180702	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1816377-012	QC320_20180703	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1791141)									
EB1816377-021	EMB/EV/NSC_20180704	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EB1816377-031	LPI_MW1_20180705	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1791141) - continued									
EB1816377-031	LPI_MW1_20180705	EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1797255)									
EB1816377-011	QC116_20180703	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1791139)									
EB1816377-001	SA017_20180702	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0141	0.0136	3.61	0% - 20%
EB1816377-012	QC320_20180703	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0003	<0.0003	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1791141)									
EB1816377-021	EMB/EV/NSC_20180704	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0014	0.0015	6.90	No Limit
EB1816377-031	LPI_MW1_20180705	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	3.96	4.28	7.79	0% - 20%
EP231P: PFAS Sums (QC Lot: 1797255)									
EB1816377-011	QC116_20180703	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0079	0.0072	9.27	0% - 20%

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1791139)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	104	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	97.4	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	115	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	118	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	65.6	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	60.4	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1791141)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	86.2	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	96.8	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	111	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	107	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	61.6	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	60.4	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1797255)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	83.4	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	97.8	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	105	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	108	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	69.6	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	60.0	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1791139)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	62.7	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	99.2	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	95.4	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	116	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	90.6	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	97.6	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	98.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	85.6	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	76.4	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	61.0	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	55.6	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1791141)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	57.3	30	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1791141) - continued								
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	90.6	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	90.4	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	112	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	84.4	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	86.6	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	89.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	81.4	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	60.0	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	44.2	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	47.8	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1797255)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	98.8	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	93.8	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	89.8	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	99.6	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	71.6	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	90.0	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	87.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	108	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	61.8	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	55.4	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	54.6	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1791139)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	63.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	50.9	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	76.3	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	95.8	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	112	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	52.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	116	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1791141)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	67.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	52.1	40	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1791141) - continued								
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	72.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	74.6	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	104	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	61.6	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	88.4	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1797255)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	69.8	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	64.8	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	68.7	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	80.1	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	68.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	55.6	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	51.6	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1791139)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	122	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	74.0	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	101	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	81.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1791141)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	99.4	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	72.8	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	91.8	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	95.2	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1797255)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	121	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	67.0	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	80.0	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	83.0	50	130
EP231P: PFAS Sums (QCLot: 1791139)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231P: PFAS Sums (QCLot: 1791141)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231P: PFAS Sums (QCLot: 1797255)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1791139)							
EB1816377-002	SA020_20180702	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	104	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	99.0	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	98.0	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	111	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	75.2	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	54.6	30	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1791141)							
EB1816377-022	EMB/LP/NSA_20180704	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	110	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	105	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	118	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	111	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	54.8	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	50.8	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1791139)							
EB1816377-002	SA020_20180702	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	59.6	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	96.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	94.2	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	117	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	91.2	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	99.2	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	109	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	83.6	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	65.6	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	53.2	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	51.0	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1791141)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1791141) - continued							
EB1816377-022	EMB/LP/NSA_20180704	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	38.7	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	116	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	87.6	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	120	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	82.4	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	79.8	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	73.2	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	61.8	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	60.2	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	46.2	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	55.7	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1791139)							
EB1816377-002	SA020_20180702	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	74.6	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	54.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	79.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	75.1	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	88.9	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	51.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	64.2	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1791141)							
EB1816377-022	EMB/LP/NSA_20180704	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	52.6	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	43.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	43.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	54.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	56.7	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	35.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	48.2	30	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1791139)							
EB1816377-002	SA020_20180702	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	120	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	85.8	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	112	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	111	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1791141)							
EB1816377-022	EMB/LP/NSA_20180704	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	106	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	82.2	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	76.8	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	59.8	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1816377**	Page	: 1 of 8
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Telephone	: +61-7-3243 7222
Project	: 18100235 Phase 4000/700	Date Samples Received	: 06-Jul-2018
Site	: ----	Issue Date	: 18-Jul-2018
Sampler	: EMMA CORNISH	No. of samples received	: 35
Order number	: 18100235	No. of samples analysed	: 34

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) SA017_20180702, SA020_20180702, SA014_20180702, LPTA_20180702	**02-Jul-2018**	**11-Jul-2018**	29-Dec-2018	✓	**13-Jul-2018**	29-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) SA015_20180702, SA013_20180703, LPI-MW13_20180703, LPI-MW19_20180703, LPI-MW11_20180703, LPI-MW12_20180703, QC320_20180703, QC412_20180703	**03-Jul-2018**	**11-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC116_20180703	**03-Jul-2018**	**12-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC321_20180704, QC117_20180704, PR/AND/DOS_20180704, SW/BEN/DOS_20180704, EMB/EV/NSA_20180704, EMB/EV/NSB_20180704	**04-Jul-2018**	**11-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) EMB/EV/NSC_20180704, EMB/LP/NSA_20180704, EMB/LP/NSB_20180704, EMB/LP/NSC_20180704, MRC/DOS__20180704, PR/EWM/WP/DOS_20180704, LPI_MW24_20180704, LPI_MW15_20180704, LPI_MW17_20180704	**04-Jul-2018**	**12-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI_MW7_20180705, LPI_MW1_20180705, LPI_MW4_20180705, LPI_MW16_20180705, SA012_20180705, LP1_MW5_20180705	**05-Jul-2018**	**12-Jul-2018**	01-Jan-2019	✓	**13-Jul-2018**	01-Jan-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
SA017_20180702,	SA020_20180702,	**02-Jul-2018**	**11-Jul-2018**	29-Dec-2018	✓	**13-Jul-2018**	29-Dec-2018	✓
SA014_20180702,	LPTA_20180702							
HDPE (no PTFE) (EP231X-ST)								
SA015_20180702,	SA013_20180703,	**03-Jul-2018**	**11-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
LPI-MW13_20180703,	LPI-MW19_20180703,							
LPI-MW11_20180703,	LPI-MW12_20180703,							
QC320_20180703,	QC412_20180703							
HDPE (no PTFE) (EP231X-ST)								
QC116_20180703		**03-Jul-2018**	**12-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC321_20180704,	QC117_20180704,	**04-Jul-2018**	**11-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
PR/AND/DOS_20180704,	SW/BEN/DOS_20180704,							
EMB/EV/NSA_20180704,	EMB/EV/NSB_20180704							
HDPE (no PTFE) (EP231X-ST)								
EMB/EV/NSC_20180704,	EMB/LP/NSA_20180704,	**04-Jul-2018**	**12-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
EMB/LP/NSB_20180704,	EMB/LP/NSC_20180704,							
MRC/DOS__20180704,	PR/EWM/WP/DOS_20180704,							
LPI_MW24_20180704,	LPI_MW15_20180704,							
LPI_MW17_20180704								
HDPE (no PTFE) (EP231X-ST)								
LPI_MW7_20180705,	LPI_MW1_20180705,	**05-Jul-2018**	**12-Jul-2018**	01-Jan-2019	✓	**13-Jul-2018**	01-Jan-2019	✓
LPI_MW4_20180705,	LPI_MW16_20180705,							
SA012_20180705,	LP1_MW5_20180705							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
SA017_20180702,	SA020_20180702,	**02-Jul-2018**	**11-Jul-2018**	29-Dec-2018	✓	**13-Jul-2018**	29-Dec-2018	✓
SA014_20180702,	LPTA_20180702							
HDPE (no PTFE) (EP231X-ST)								
SA015_20180702,	SA013_20180703,	**03-Jul-2018**	**11-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
LPI-MW13_20180703,	LPI-MW19_20180703,							
LPI-MW11_20180703,	LPI-MW12_20180703,							
QC320_20180703,	QC412_20180703							
HDPE (no PTFE) (EP231X-ST)								
QC116_20180703		**03-Jul-2018**	**12-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC321_20180704,	QC117_20180704,	**04-Jul-2018**	**11-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
PR/AND/DOS_20180704,	SW/BEN/DOS_20180704,							
EMB/EV/NSA_20180704,	EMB/EV/NSB_20180704							
HDPE (no PTFE) (EP231X-ST)								
EMB/EV/NSC_20180704,	EMB/LP/NSA_20180704,	**04-Jul-2018**	**12-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
EMB/LP/NSB_20180704,	EMB/LP/NSC_20180704,							
MRC/DOS__20180704,	PR/EWM/WP/DOS_20180704,							
LPI_MW24_20180704,	LPI_MW15_20180704,							
LPI_MW17_20180704								
HDPE (no PTFE) (EP231X-ST)								
LPI_MW7_20180705,	LPI_MW1_20180705,	**05-Jul-2018**	**12-Jul-2018**	01-Jan-2019	✓	**13-Jul-2018**	01-Jan-2019	✓
LPI_MW4_20180705,	LPI_MW16_20180705,							
SA012_20180705,	LP1_MW5_20180705							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
SA017_20180702,	SA020_20180702,	**02-Jul-2018**	**11-Jul-2018**	29-Dec-2018	✓	**13-Jul-2018**	29-Dec-2018	✓
SA014_20180702,	LPTA_20180702							
HDPE (no PTFE) (EP231X-ST)								
SA015_20180702,	SA013_20180703,	**03-Jul-2018**	**11-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
LPI-MW13_20180703,	LPI-MW19_20180703,							
LPI-MW11_20180703,	LPI-MW12_20180703,							
QC320_20180703,	QC412_20180703							
HDPE (no PTFE) (EP231X-ST)								
QC116_20180703		**03-Jul-2018**	**12-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC321_20180704,	QC117_20180704,	**04-Jul-2018**	**11-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
PR/AND/DOS_20180704,	SW/BEN/DOS_20180704,							
EMB/EV/NSA_20180704,	EMB/EV/NSB_20180704							
HDPE (no PTFE) (EP231X-ST)								
EMB/EV/NSC_20180704,	EMB/LP/NSA_20180704,	**04-Jul-2018**	**12-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
EMB/LP/NSB_20180704,	EMB/LP/NSC_20180704,							
MRC/DOS__20180704,	PR/EWM/WP/DOS_20180704,							
LPI_MW24_20180704,	LPI_MW15_20180704,							
LPI_MW17_20180704								
HDPE (no PTFE) (EP231X-ST)								
LPI_MW7_20180705,	LPI_MW1_20180705,	**05-Jul-2018**	**12-Jul-2018**	01-Jan-2019	✓	**13-Jul-2018**	01-Jan-2019	✓
LPI_MW4_20180705,	LPI_MW16_20180705,							
SA012_20180705,	LP1_MW5_20180705							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
SA017_20180702,	SA020_20180702,	**02-Jul-2018**	**11-Jul-2018**	29-Dec-2018	✓	**13-Jul-2018**	29-Dec-2018	✓
SA014_20180702,	LPTA_20180702							
HDPE (no PTFE) (EP231X-ST)								
SA015_20180702,	SA013_20180703,	**03-Jul-2018**	**11-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
LPI-MW13_20180703,	LPI-MW19_20180703,							
LPI-MW11_20180703,	LPI-MW12_20180703,							
QC320_20180703,	QC412_20180703							
HDPE (no PTFE) (EP231X-ST)								
QC116_20180703		**03-Jul-2018**	**12-Jul-2018**	30-Dec-2018	✓	**13-Jul-2018**	30-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC321_20180704,	QC117_20180704,	**04-Jul-2018**	**11-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
PR/AND/DOS_20180704,	SW/BEN/DOS_20180704,							
EMB/EV/NSA_20180704,	EMB/EV/NSB_20180704							
HDPE (no PTFE) (EP231X-ST)								
EMB/EV/NSC_20180704,	EMB/LP/NSA_20180704,	**04-Jul-2018**	**12-Jul-2018**	31-Dec-2018	✓	**13-Jul-2018**	31-Dec-2018	✓
EMB/LP/NSB_20180704,	EMB/LP/NSC_20180704,							
MRC/DOS__20180704,	PR/EWM/WP/DOS_20180704,							
LPI_MW24_20180704,	LPI_MW15_20180704,							
LPI_MW17_20180704								
HDPE (no PTFE) (EP231X-ST)								
LPI_MW7_20180705,	LPI_MW1_20180705,	**05-Jul-2018**	**12-Jul-2018**	01-Jan-2019	✓	**13-Jul-2018**	01-Jan-2019	✓
LPI_MW4_20180705,	LPI_MW16_20180705,							
SA012_20180705,	LP1_MW5_20180705							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	5	34	**14.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	3	34	**8.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	3	34	**8.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	2	34	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction and LC-Electrospray-MS-MS, Negative Mode using MRM. This method is targetted to pristine environmental and drinking waters reportin at sub-parts per trillion. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EB1816377**
Amendment	: **1**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: ecornish@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: +61 07 4724 0311	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 18100235 Phase 4000/700	Page	: 1 of 3
Order number	: 18100235	Quote number	: EB2018GOLASS0004 (BN/112/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: EMMA CORNISH		

Dates

Date Samples Received	: 06-Jul-2018 09:50	Issue Date	: 18-Jul-2018
Client Requested Due Date	: 16-Jul-2018	Scheduled Reporting Date	: **16-Jul-2018**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 18.6°c, 16.0°c - Ice present
Receipt Detail	: Medium Esky	No. of samples received / analysed	: 35 / 34

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- ***12/07/2018*: SRN has been resent to acknowledge the addition of EP231X-ST analysis to EB1816377-011 (QC116_20180703) and removal of analysis from 014 (QC413_20180703) as per the COC. For any further information regarding these adjustments please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- ***18/07/2018*: SRN has been resent to acknowledge a change to Sample ID for ALS #25 to reflect the COC. For any further information regarding these adjustments please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EB1816377-026 : [04-Jul-2018] : PR/EWM/WP/DOS_20180704

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	*Client sampling date / time*	*Client sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB1816377-001	02-Jul-2018 00:00	SA017_20180702	✓
EB1816377-002	02-Jul-2018 00:00	SA020_20180702	✓
EB1816377-003	02-Jul-2018 00:00	SA014_20180702	✓
EB1816377-004	02-Jul-2018 00:00	LPTA_20180702	✓
EB1816377-005	03-Jul-2018 00:00	SA015_20180702	✓
EB1816377-006	03-Jul-2018 00:00	SA013_20180703	✓
EB1816377-007	03-Jul-2018 00:00	LPI-MW13_20180703	✓
EB1816377-008	03-Jul-2018 00:00	LPI-MW19_20180703	✓
EB1816377-009	03-Jul-2018 00:00	LPI-MW11_20180703	✓
EB1816377-010	03-Jul-2018 00:00	LPI-MW12_20180703	✓
EB1816377-011	03-Jul-2018 00:00	QC116_20180703	✓
EB1816377-012	03-Jul-2018 00:00	QC320_20180703	✓
EB1816377-013	03-Jul-2018 00:00	QC412_20180703	✓
EB1816377-015	04-Jul-2018 00:00	QC321_20180704	✓
EB1816377-016	04-Jul-2018 00:00	QC117_20180704	✓
EB1816377-017	04-Jul-2018 00:00	PR/AND/DOS_20180704	✓
EB1816377-018	04-Jul-2018 00:00	SW/BEN/DOS_20180704	✓
EB1816377-019	04-Jul-2018 00:00	EMB/EV/NSA_20180704	✓
EB1816377-020	04-Jul-2018 00:00	EMB/EV/NSB_20180704	✓
EB1816377-021	04-Jul-2018 00:00	EMB/EV/NSC_20180704	✓
EB1816377-022	04-Jul-2018 00:00	EMB/LP/NSA_20180704	✓
EB1816377-023	04-Jul-2018 00:00	EMB/LP/NSB_20180704	✓
EB1816377-024	04-Jul-2018 00:00	EMB/LP/NSC_20180704	✓
EB1816377-025	04-Jul-2018 00:00	MRC/DOS__20180704	✓
EB1816377-026	04-Jul-2018 00:00	PR/EWM/WP/DOS_201807..	✓
EB1816377-027	04-Jul-2018 00:00	LPI_MW24_20180704	✓
EB1816377-028	04-Jul-2018 00:00	LPI_MW15_20180704	✓
EB1816377-029	04-Jul-2018 00:00	LPI_MW17_20180704	✓
EB1816377-030	05-Jul-2018 00:00	LPI_MW7_20180705	✓
EB1816377-031	05-Jul-2018 00:00	LPI_MW1_20180705	✓
EB1816377-032	05-Jul-2018 00:00	LPI_MW4_20180705	✓
EB1816377-033	05-Jul-2018 00:00	LPI_MW16_20180705	✓
EB1816377-034	05-Jul-2018 00:00	SA012_20180705	✓

			WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB1816377-035	05-Jul-2018 00:00	LP1_MW5_20180705	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

GREG WHITMORE

- *AU Certificate of Analysis - NATA (COA)	Email	gwhitmore@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gwhitmore@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gwhitmore@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gwhitmore@golder.com.au
- Chain of Custody (CoC) (COC)	Email	gwhitmore@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	gwhitmore@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	gwhitmore@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	gwhitmore@golder.com.au

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No: 13100235 | Phone: 4000/7004 | Lab Name: ALS - Brisbane
Site ID No.: | Site Location: Project Sun | Quote No.: BN/113/18
Sampled By: E. Cornish | Order No.:
Turnaround Time: Mthrs ☐ 5 Mthrs ☐ 1 Day ☐ | Standard ■ | Due Required By:
Delivery Option: HAND ☐ FAX ☐ ERIC ☐ EMAIL ■ BULLETIN BOARD ☐
Report Format: PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■

Address: 2nd Floor, 5 Reid Street (cnr Stead & Reid Streets), Northam QLD 4051, AUSTRALIA

GOLDER ASSOCIATES PTY LTD
Project Manager: Greg Wilkinson
Sub Contact: Emma Cornish
Phone: 07 3657 4200 | Fax: 07 3857 8831 | Reference: | Phone: 0427 734 413 | Email: ecornish@golder.com.au

GOLDER

Environmental Division
Brisbane
Work Order Reference
EB1816377

Telephone : + 61-7-3243 7222

ANALYSIS REQUIRED:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No. CONTAINERS	Level of Contamination (Low/Medium/High)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Super Trace Long Suite (25 analytes) (EP231X-ST)	HOLD
1	SA017_20180702		2/7/18	DS	WATER	1			X	
2	SA020_20180702		2/7/18	DS	WATER	1			X	
3	SA014_20180702		2/7/18	DS	WATER	1			X	
4	LPTA_20180702		2/7/18	DS	WATER	1			X	
5	SA015_20180703		3/7/18	DS	WATER	1			X	
6	SA013_20180703		3/7/18	DS	WATER	1			X	
7	LPI-MW13_20180703		3/7/18	DS	WATER	1			X	
8	LPI-MW14_20180703		3/7/18	DS	WATER	1			X	
9	LPI_MW11_20180703		3/7/18	DS	WATER	1			X	
10	LPI-MW12_20180703		3/7/18	DS	WATER	1			X	

SAMPLE MATRIX – Soil/Solid/Sediment/Powder/Other | SAMPLE TYPE – Composite/Grab/Trip Blank/Trip Spike/Rinsate/Field Blank/Duplicate/Split Sample (QC)

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Cornish	GOLDER	5/7/18	11:00
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

ICOLD CONCENTRATION: circle expected concentration in analytical line

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment / Shipping Ref.
RELEASED BY					
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER:
Security Seal: Intact / Broken
Suitable Containers: Cooled / Frozen / Ambient
COC Seal: Present / Absent / Amount

THIS FORM IS TO BE SIGNED BY GOLDER STAFF, COURIER(S), LABORATORY ON RECEIPT OF SAMPLES.

SWilkins 6/7/18 9:50

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No: 18160238 Phase: 4000/100 Lab Name: ALS - Brisbane

Site ID No.: Site Location: Project No.: Quote No.: BN/12/18

Sampled By: E. Cornish Order No.:

Turnaround Time: 24hrs ☐ 48hrs ☐ Standard ■ 3 Days ☐ 5 Days ☐ Date Required By:

Address (2 Byth Street (not Shed 4 Byth Street) Stafford QLD 4053 AUSTRALIA

Delivery Option: HARD ☐ FAX ☐ RDA ☐ EMAIL ■ BULLETIN BOARD ☐

Report Format: PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD
Project Manager: Troy Wilkinson
Sub Contact: Shane Cusick
Phone: 07 4054 0200 Fax: 07 4054 0207 Website: Email:

GOLDER

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Super Trace Long Suite (28 analytes) (EP231X-ST)	HOLD	Comments
11	QC116-20180703		3/7/18	DS	WATER	1			X		
12	QC320-20180703		3/7/18	DS	WATER	1			X		
13	QC412-20180703		3/7/18	DS	WATER	1			X		
14	QC413-20180703		3/7/18	DS	WATER	1			X	X	
15	QC321-20180704		4/7/18	DS	WATER	1			X		
16	QC117-20180704		4/7/18	DS	WATER	1			X		
17	PR/AND/DOS-20180704		4/7/18	DS	WATER	1			X		
18	SW/BEN/DOS-20180704		4/7/18	DS	WATER	1			X		
19	EMB/EV/NSA-20180704		4/7/18	DS	WATER	1			X		
20	EMB/EV/NSB-20180704		4/7/18	DS	WATER	1			X		

SAMPLE MATRIX • Soil Sediment S/S Water/Other SAMPLE TYPE • Composite/Discrete/BOD/Dissolved/EDD/Grab/CE/ Oil Sample/QD

HIGH CONCENTRATION: (circle expected parameter in samples list)

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment / Shipping Ref.
RELEASED BY:	E. Cornish	GOLDER	5/7/18	11:00	
RECEIVED BY:					
RELEASED BY:					
RECEIVED BY:					
RELEASED BY:					
RECEIVED BY:					

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY:				
RECEIVED BY:				

To Be Filled Out By Analysing Laboratory

Security Seal: Intact: Courier: Lab Jnr: Number Containers: Temp: Address: Cool Box: Assistant:

LAB ADVICE NUMBER:

J Williams 6/7/18 9:50

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

3/4

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No: 18102225 | Phone: 4000/700 | Task Name: | ALS - Brisbane

Site ID No.: | Site Location: Project Site | Quote No.: | BN/112718

Sampled By: E. Cornish | Order No.:

Turnaround Time: 24hrs ☐ 48hrs ☐ Standard ■ | 48hrs ☐ 1 Day ☐ | Date Required By:

Address: (Unit/Floor/Street Name & Number) Stafford QLD 4053 AUSTRALIA

Delivery Option: HAND ☐ FAX ☐ DHL ☐ EMAIL ■ BULLETIN BOARD ☐

Report Format: PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD | Phone: 07 40545500 | Project Manager: Greg Wilcocks | Fax: 07 40545501 | Sub Contact: Fiona Carville | Backcard: | Phone: 0477134807 (Work)

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No. CONTAINERS	Cont'd (Containership Cost/Weight/Volume)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Super Trace Long Suite (28 analytes) (EP231X-ST)	HOLD	Comments
21	EMB/EU/NSC_20180704		4/7/18	DS	WATER	1			X		
22	EMB/LP/NSA_20180704		4/7/18	DS	WATER	1			X		
23	EMB/LP/NSB_20180704		4/7/18	DS	WATER	1			X		
24	EMB/LP/NSC_20180704		4/7/18	DS	WATER	1			X		
25	MRC/DOS_20180704		4/7/18	DS	WATER	1			X		
26	PR/EWM/WP/DOS_20180704		4/7/18	DS	WATER	1			X		
27	LPI_MW24_20180704		4/7/18	DS	WATER	1			X		
28	LPI-MW15_20180704		4/7/18	DS	WATER	1			X		
29	LPI-MW17_20180704		4/7/18	DS	WATER	1			X		
30	LPI-MW7_20180705		5/7/18	DS	WATER	1			X		

SAMPLE MATRIX: Soil/Sediment/Solid/Waste/Other | SAMPLE TYPE: Composite/Grab/Bulk/Waste/Other | HIGH CONCENTRATION: circle expected concentration for analyses list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Cornish	GOLDER	5/7/18	11:00
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment / Shipping Ref
RELEASED BY					
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal: Chilled ☐ Bill to:

Suitable Container: Frozen ☐ Address:

Condition: Ambient ☐

Chilled 6/7/18 9.5°

SLJ
07/704
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER'S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100735	Phone: 4000 7600	Lab Name: ALS - Brisbane
Site ID No.:		Site Location: Pioneer Sate.	Quote No.: BN/112/18
Sampled By:	E. Cornish		Order No.:
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ■	3 Days ☐	Date Required By:
Delivery Option	RAIN ☐ FAX ☐ DISK ☐ EMAIL ■	BULLETIN BOARD ☐	
Report Format	PDF ■ EXCEL ■	ESDAT ■	ENVIROSYS ■

Address: 2 Byth Street (cnr Shand & Byth Street) Stafford QLD 4053 AUSTRALIA

GOLDER ASSOCIATES PTY LTD
168 Fraser St, Clinton, 4070
Project Manager: Greg Whitmore
Sub-Contact: Tatum Cornish
Phone: 07 4969 8200
Fax: 07 4969 8201
Mobile:
Phone:
Email:

GOLDER

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Unknown/Known)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Super Trace Long Suite (28 analytes) (EP231X-ST)	Comments
31	LPI-MW1-20180705		5/7/18	DS	WATER	1			X	
32	LPI-MW4-20180705		5/7/18	DS	WATER	1			X	
33	LPI_MW16-20180705		5/7/18	DS	WATER	1			X	
34	SA012-20180702		2/7/18	DS	WATER	1			X	
35	LPI-MW5-20180705		5/7/18	DS	WATER	1			X	

SAMPLE MATRIX - Soil/Sediment/Water/Other

SAMPLE TYPE - Composite (C)/Duplicate (D)/Grab (G)/Trip (TP)/Trip Blank (TB)

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Cornish	GOLDER	5/7/18	11:00
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

ITEM CONCENTRATION: circle expected parameter concentration list

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Express (24hr)
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal	Chilled		Bag no.
Suitable Containers	Frozen		Address
Cool Pack	Ambient		

RECEIVED 6/7/18 9:5.

THIS FORM IS TO BE SIGNED BY GOLDER STAFF/ COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS
ENV004
Feb 2011

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1816698**	Page	: 1 of 7
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS ASEA ORNTMI SE	Contact	: Carsten EmricH
hddress	: 216 DShPES QTSEET ChNS, QULD4h8 QTShLNt 5370	hddress	: 2 BytHQtreet Qtafford ULD hustralia 50p+
Tele-Hone	: jjjj	Tele-Hone	: / 61j7j+25+ 7222
Pro.ect	: 131002+p PHase 50009700	Date Qam-les Seceived	: 10j(uljZ013 0) :5p
I rder number	: 131002+p	Date hnalysis Commenced	: 1+j(uljZ013
CjI jC number	: jjjj	Nsue Date	: 13j(uljZ013 1+:51
Qam-ler	: EMMh CI S, NDR		
Qite	: Pro.ect Qam		
Uuote number	: B, 9I129I3		
, o. of sam-les received	: 7		
, o. of sam-les analysed	: 7		

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

THis re-ort su-ersedes any -revious re-ortwx GitHtHis reference. Sesults a--ly to tHe sam-lewx as submitted. THis document sHall not be re-roduced4ezce-t in full.

THis Certificate of hnalysis contains tHe folloGing information:

- Aeneral Comments
- hnalytical Sesults
- Qurrogate 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 autHoriFed signatories beloG. Electronic signing is carried out in com-liance GitH -rocedures s-ecified in 21 CWS Part 11.

Signatories	*Position*	*Accreditation Category*
Wanco Lentini		Qydney I rganics4QmitHfield4, QO

General Comments

THe analytical - rocedures used by tHe Environmental Division Have been develo- ed from establisHed internationally recogniFed - rocedures sucH as tHose - ublisHed by tHe 8QEPh4 hPRh4 hQ and , EPM. Nt House develo- ed - rocedures are em- loyed in tHe absence of documented standards or by client request.

O Here moisture determination Has been - erformed4results are re- orted on a dry GeigHt basis.

O Here a re- orted less tHan w<x result is HgHer tHan tHe LI S4tHs may be due to - rimary sam- le eztract9digestate dilution and9or insufficient sam- le for analysis.

O Here tHe LI S of a re- orted result differs from standard LI S4tHs may be due to HgH moisture content4insufficient sam- le weduced GeigHt em- loyedx or matriz interference.

O Hen sam- ling time information is not - rovided by tHe client4sam- ling dates are sHoGn GitHout a time com- onent. Nt tHese instances4tHe time com- onent Has been assumed by tHe laboratory for - rocessing - ur- oses.

O Here a result is required to meet com- liance limits tHe associated uncertainty must be considered. Sefer to tHe hLQ Contact for details.

Key : ChQ , umber = ChQ registry number from database maintained by CHemical hbstracts Qervices. THe CHemical hbstracts Qervice is a division of tHe hmerican CHemical Qociety.
LI S = Limit of re- orting
^ = THis result is com- uted from individual analyte detections at or above tHe level of re- orting
ø = hLQ is not , hTh accredited for tHese tests.
~ = Nndicates an estimated value.

- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**

Analytical Results

Qubj Matriz: WATER (Matriz: WATER)				Client sample ID	LPI_MW8_20180705	LPI_MW20_20180705	LPI_MW21_20180705	QC118_20180705	QC322_20180705
				Client sampling date / time	0pj (ulj 2013 00:00	0pj (ulj 2013 00:00	0pj (ulj 2013 00:00	0pj (ulj 2013 00:00	0pj (ulj 2013 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**EB1816698-001**	**EB1816698-002**	**EB1816698-003**	**EB1816698-004**	**EB1816698-005**
					Sesult	Sesult	Sesult	Sesult	Sesult
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	+7pj 7+jp	0.000p	µg9L		**0.184**	**0.0016**	**0.0396**	**0.179**	<0.000p
Perfluoropentane sulfonic acid (PFPeS)	2706j) 1j 5	0.000p	µg9L		**0.147**	**0.0014**	**0.0501**	**0.158**	<0.000p
Perfluorohexane sulfonic acid (PFHxS)	+ppj 56j 5	0.000p	µg9L		**1.88**	**0.0166**	**0.484**	**1.90**	<0.000p
Perfluoroheptane sulfonic acid (PFHpS)	+7pj) 2j 3	0.000p	µg9L		**0.186**	**0.0012**	**0.0450**	**0.178**	<0.000p
Perfluorooctane sulfonic acid (PFOS)	176+j 2+j 1	0.000+	µg9L		**2.25**	**0.0395**	**0.738**	**2.33**	<0.000+
Perfluorodecane sulfonic acid (PFDS)	++pj 77j +	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	+7pj 22j 5	0.002	µg9L		**0.027**	<0.002	**0.009**	**0.026**	<0.002
Perfluoropentanoic acid (PFPeA)	2706j) 0j +	0.000p	µg9L		**0.0952**	**0.0017**	**0.0317**	**0.0916**	<0.000p
Perfluorohexanoic acid (PFHxA)	+07j 25j 5	0.000p	µg9L		**0.356**	**0.0031**	**0.0873**	**0.374**	<0.000p
Perfluoroheptanoic acid (PFHpA)	+7pj 3pj)	0.000p	µg9L		**0.112**	**0.0018**	**0.0614**	**0.117**	<0.000p
Perfluorooctanoic acid (PFOA)	++pj 67j 1	0.000p	µg9L		**0.137**	**0.0023**	**0.0598**	**0.141**	<0.000p
Perfluorononanoic acid (PFNA)	+7pj) pj 1	0.000p	µg9L		**0.0046**	<0.000p	**0.0021**	**0.0043**	<0.000p
Perfluorodecanoic acid (PFDA)	++pj 76j 2	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
Perfluoroundecanoic acid (PFUnDA)	20p3j) 5j 3	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
Perfluorododecanoic acid (PFDoDA)	+07j ppj 1	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
Perfluorotridecanoic acid (PFTrDA)	7262) j) 5j 3	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
Perfluorotetradecanoic acid (PFTeDA)	+76j 06j 7	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	7p5j) 1j 6	0.000p	µg9L		**0.0013**	<0.000p	<0.000p	<0.000p	<0.000p
N-Methyl perfluorooctane sulfonamide (MeFOSA)	+1p06j +2j 3	0.001	µg9L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	51p1jp0j 2	0.001	µg9L		<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

QubjMatriz: WATER (Matriz: WATER)				Client sample ID	LPI_MW8_20180705	LPI_MW20_20180705	LPI_MW21_20180705	QC118_20180705	QC322_20180705
				Client sampling date / time	0pj(ulj2013 00:00	0pj(ulj2013 00:00	0pj(ulj2013 00:00	0pj(ulj2013 00:00	0pj(ulj2013 00:00
Compound	CAS Number	LOR	Unit		EB1816698-001	EB1816698-002	EB1816698-003	EB1816698-004	EB1816698-005
					Sesult	Sesult	Sesult	Sesult	Sesult
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	25553j0)j7	0.001	µg9L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	16)1j))j2	0.001	µg9L		<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2+ppj+1j)	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2))1jp0j6	0.000p	µg9L		<0.000p	<0.000p	<0.000p	<0.000p	<0.000p
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	7p7125j72j5	0.001	µg9L		<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	2761)j)7j2	0.001	µg9L		**0.014**	<0.001	**0.005**	**0.014**	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	+)103j+5j5	0.001	µg9L		<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226j60j0	0.001	µg9L		<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums									
Sum of PFAS	jjjj	0.000+	µg9L		**5.39**	**0.0692**	**1.61**	**5.51**	<0.000+
Sum of PFHxS and PFOS	+ppj56j59l76+j2+j1	0.000+	µg9L		**4.13**	**0.0561**	**1.22**	**4.23**	<0.000+
Sum of PFAS (WA DER List)	jjjj	0.000+	µg9L		**5.06**	**0.0666**	**1.52**	**5.17**	<0.000+
EP231S: PFAS Surrogate									
13C4-PFOS	jjjj	0.000p	%		**88.5**	**104**	**118**	**104**	**94.7**
13C8-PFOA	jjjj	0.000p	%		**91.5**	**112**	**113**	**109**	**96.3**

Analytical Results

QubjMatriz: WATER (Matriz: WATER)				Client sample ID	LPI_MW18_20180705	LPI_MW22_20180705	----	----	----
				Client sampling date / time	0pj(ulj2013 00:00	0pj(ulj2013 00:00	jjjj	jjjj	jjjj
Compound	CAS Number	LOR	Unit		EB1816698-006	EB1816698-007	--------	--------	--------
					Sesult	Sesult	jjjj	jjjj	jjjj
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	+7pj7+jp	0.000p	µg9_		**0.0020**	**0.0011**	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706j)1j5	0.000p	µg9_		**0.0020**	**0.0009**	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	+ppj56j5	0.000p	µg9_		**0.0261**	**0.0092**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	+7pj)2j3	0.000p	µg9_		**0.0017**	**0.0005**	----	----	----
Perfluorooctane sulfonic acid (PFOS)	176+j2+j1	0.000+	µg9_		**0.0415**	**0.0063**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	++pj77j+	0.000p	µg9_		<0.000p	<0.000p	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	+7pj22j5	0.002	µg9_		<0.002	<0.002	----	----	----
Perfluoropentanoic acid (PFPeA)	2706j)0j+	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluorohexanoic acid (PFHxA)	+07j25j5	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluoroheptanoic acid (PFHpA)	+7pj3pj)	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluorooctanoic acid (PFOA)	++pj67j1	0.000p	µg9_		**0.0007**	**0.0008**	----	----	----
Perfluorononanoic acid (PFNA)	+7pj)pj1	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluorodecanoic acid (PFDA)	++pj76j2	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluoroundecanoic acid (PFUnDA)	20p3j)5j3	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluorododecanoic acid (PFDoDA)	+07jppj1	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluorotridecanoic acid (PFTrDA)	7262)j)5j3	0.000p	µg9_		<0.000p	<0.000p	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	+76j06j7	0.000p	µg9_		<0.000p	<0.000p	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	7p5j)1j6	0.000p	µg9_		<0.000p	<0.000p	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	+1p06j+2j3	0.001	µg9_		<0.001	<0.001	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	51p1jp0j2	0.001	µg9_		<0.001	<0.001	----	----	----

Analytical Results

Qubj Matriz: WATER (Matriz: WATER)				Client sample ID	LPI_MW18_20180705	LPI_MW22_20180705	----	----	----
				Client sampling date / time	0pj(ulj2013 00:00	0pj(ulj2013 00:00	jjjj	jjjj	jjjj
Compound	CAS Number	LOR	Unit		EB1816698-006	EB1816698-007	--------	--------	--------
					Sesult	Sesult	jjjj	jjjj	jjjj
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	25553j0)j7	0.001	µg9L		<0.001	<0.001	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	16)1j))j2	0.001	µg9L		<0.001	<0.001	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2+ppj+1j)	0.000p	µg9L		<0.000p	<0.000p	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2))1jp0j6	0.000p	µg9L		<0.000p	<0.000p	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	7p7125j72j5	0.001	µg9L		<0.001	<0.001	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	2761)j)7j2	0.001	µg9L		<0.001	<0.001	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	+)103j+5j5	0.001	µg9L		<0.001	<0.001	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226j60j0	0.001	µg9L		<0.001	<0.001	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	jjjj	0.000+	µg9L		**0.0740**	**0.0188**	----	----	----
Sum of PFHxS and PFOS	+ppj56j59l76+j2+j1	0.000+	µg9L		**0.0676**	**0.0155**	----	----	----
Sum of PFAS (WA DER List)	jjjj	0.000+	µg9L		**0.0703**	**0.0174**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	jjjj	0.000p	%		**89.6**	**104**	----	----	----
13C8-PFOA	jjjj	0.000p	%		**96.9**	**103**	----	----	----

Surrogate Control Limits

Qubj Matriz: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	jjjj	60	120
13C8-PFOA	jjjj	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1816698**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 18100235 Phase 4000/700	Date Samples Received	: 10-Jul-2018
Order number	: 18100235	Date Analysis Commenced	: 13-Jul-2018
C-O-C number	: ----	Issue Date	: 18-Jul-2018
Sampler	: EMMA CORNISH		
Site	: Project Sam		
Quote number	: BN/112/18		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1798125)									
EB1816698-001	LPI_MW8_20180705	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	2.25	2.06	9.23	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.184	0.170	8.31	0% - 20%
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.147	0.133	10.1	0% - 20%
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	1.88	1.63	13.8	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.186	0.164	12.5	0% - 20%
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1798125)									
EB1816698-001	LPI_MW8_20180705	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0952	0.0928	2.53	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.356	0.332	7.21	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.112	0.110	1.61	0% - 20%
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.137	0.138	0.131	0% - 20%
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	0.0046	0.0044	3.10	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	0.027	0.027	0.00	0% - 50%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1798125)									
EB1816698-001	LPI_MW8_20180705	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	0.0013	0.0011	18.5	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1798125)									
EB1816698-001	LPI_MW8_20180705	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	0.014	0.014	0.00	0% - 50%
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 1798125)									
EB1816698-001	LPI_MW8_20180705	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	5.39	4.88	10.1	0% - 20%

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1798125)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	87.8	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	79.6	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	102	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	82.6	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	80.0	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	53.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1798125)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	63.6	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	101	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	111	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	121	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	99.2	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	103	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	103	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	73.2	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	55.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	41.8	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	53.5	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1798125)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	93.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	49.8	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	53.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	54.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	54.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	52.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	48.4	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1798125)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	88.4	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	130	50	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1798125) - continued								
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	85.0	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	50.8	50	130
EP231P: PFAS Sums (QCLot: 1798125)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1798125)							
EB1816698-002	LPI_MW20_20180705	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	108	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	85.8	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	102	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	82.4	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	64.2	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	68.2	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1798125)							
EB1816698-002	LPI_MW20_20180705	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	93.7	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	110	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	120	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	126	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	103	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	104	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	99.4	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	83.4	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	46.0	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	38.4	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	62.6	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1798125)							
EB1816698-002	LPI_MW20_20180705	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	94.0	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	48.5	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	50.4	30	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1798125) - continued							
EB1816698-002	LPI_MW20_20180705	EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	46.7	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	48.9	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	46.2	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	42.8	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1798125)							
EB1816698-002	LPI_MW20_20180705	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	87.6	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	127	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	83.4	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	53.4	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1816698**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS ASEA ORNTMI SE	TeleHpone	: h+16 67387 - 333
Pro2ect	: 141j j 370 Ppase 8j j j 5 j j	Date / amHes Seceived	: 1j 6Jul63j 14
/ ite	: Pro2ect / am	Nsue Date	: 146Jul63j 14
/ amHer	: EMM. CI SQNR	Qo(of samHes received	: -
I rder number	: 141j j 370	Qo(of samHes analysed	: -

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 metpod summaries and references are also Hrovided to assist in traceability(

Summary of Outliers

Outliers : Quality Control Samples

Tpis reHort pigpligpts outliers flagged in tpe) uality Control W/ CkSeHort(

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

NisamHes are identified beloq as paving been analysed or eztracted outside of recommended polding times&tpis spould be taGen into consideration q pen interHreting results(

Tpis reHort summariUes eztraction 5 HreHaration and analysis times and comHares eacp qitp . L/ recommended polding times WeferencingH/ EP. / O 48+& . PR. & . / and QEPMk based on tpe samHle container HrovideH(Dates reHorted reHresent first date of eztraction or analysis and HreclubeH subse, uent dilutions and reruns(. listing of breacpes WF anykis HrovideH perein(

Rolding time for leacpate metpods WF(g(TCLPk vary according to tpe analytes reHorted(. ssessment comHares tpe leacp date qitp tpe sportest analyte polding time for tpe e, uivalent soil metpod(Tpese are: organics 18 days&mercury 34 days x otper metals 14j days(. recorded breacp does not guarantee a breacp for all nonGvolatile HarameterH(

Rolding times for ***VOC in soils*** vary according to analytes of interest(; inyl Cploride and / tyrene polding time is - daysw otpers 18 days(. recorded breacp does not guarantee a breacp for all ; I C analytes and spould be verified in case tpe reHorted breacp is a false Hositive or ; inyl Cploride and / tyrene are not Gey analytes of interest5concern(

Matriz: **WATER** Evaluation: × _ Rolding time breacp w✓ _ O itpin polding 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-ST)							
LPN9MO 493j 14j - j 0&	LPN9MO 3j 93j 14j - j 0&	**05-Jul-2018**	**13-Jul-2018**	j 16Jan63j 1V	✓	**16-Jul-2018**	j 16Jan63j 1V	✓
LPN9MO 3193j 14j - j 0&	) C11493j 14j - j 0&							
) C73393j 14j - j 0&	LPN9MO 1493j 14j - j 0&							
LPN9MO 3393j 14j - j 0								
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST)							
LPN9MO 493j 14j - j 0&	LPN9MO 3j 93j 14j - j 0&	**05-Jul-2018**	**13-Jul-2018**	j 16Jan63j 1V	✓	**16-Jul-2018**	j 16Jan63j 1V	✓
LPN9MO 3193j 14j - j 0&	) C11493j 14j - j 0&							
) C73393j 14j - j 0&	LPN9MO 1493j 14j - j 0&							
LPN9MO 3393j 14j - j 0								
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST)							
LPN9MO 493j 14j - j 0&	LPN9MO 3j 93j 14j - j 0&	**05-Jul-2018**	**13-Jul-2018**	j 16Jan63j 1V	✓	**16-Jul-2018**	j 16Jan63j 1V	✓
LPN9MO 3193j 14j - j 0&	) C11493j 14j - j 0&							
) C73393j 14j - j 0&	LPN9MO 1493j 14j - j 0&							
LPN9MO 3393j 14j - j 0								
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST)							
LPN9MO 493j 14j - j 0&	LPN9MO 3j 93j 14j - j 0&	**05-Jul-2018**	**13-Jul-2018**	j 16Jan63j 1V	✓	**16-Jul-2018**	j 16Jan63j 1V	✓
LPN9MO 3193j 14j - j 0&	) C11493j 14j - j 0&							
) C73393j 14j - j 0&	LPN9MO 1493j 14j - j 0&							
LPN9MO 3393j 14j - j 0								
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST)							
LPN9MO 493j 14j - j 0&	LPN9MO 3j 93j 14j - j 0&	**05-Jul-2018**	**13-Jul-2018**	j 16Jan63j 1V	✓	**16-Jul-2018**	j 16Jan63j 1V	✓
LPN9MO 3193j 14j - j 0&	) C11493j 14j - j 0&							
) C73393j 14j - j 0&	LPN9MO 1493j 14j - j 0&							
LPN9MO 3393j 14j - j 0								

Quality Control Parameter Frequency Compliance

Tpe folloq ing reHort summarises tpe fre, uency of laboratory) C samHles analysed q itpin tpe analytical lotWk in q picp tpe submitted samHleWk q asWerekHrocessed(. ctual rate spould be greater tpan or e, ual to tpe ezHected rate(. listing of breacpes is Hrovided in tpe / ummary of I utliers(

Matriz: **WATER**

Evaluation: × _) uality Control fre, uency not q itpin sHecification w✓ _) uality Control fre, uency q itpin sHecification(

) uality Control / amHle TyHe		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory DuHlicates W=Pk							
Per6and PolyfluoroalGyl / ubstances WF. / kby LCM/ M/	EP371X6 T	1	-	**14.29**	**10.00**	✓	QEPM 3j 17 B7 x . L/) C / tandard
Laboratory Control / amHles WC/ k							
Per6and PolyfluoroalGyl / ubstances WF. / kby LCM/ M/	EP371X6 T	1	-	**14.29**	**5.00**	✓	QEPM 3j 17 B7 x . L/) C / tandard
Metpod BlanGs WBk							
Per6and PolyfluoroalGyl / ubstances WF. / kby LCM/ M/	EP371X6 T	1	-	**14.29**	**5.00**	✓	QEPM 3j 17 B7 x . L/) C / tandard
Matriz / HGes W/ k							
Per6and PolyfluoroalGyl / ubstances WF. / kby LCM/ M/	EP371X6 T	1	-	**14.29**	**5.00**	✓	QEPM 3j 17 B7 x . L/) C / tandard

Brief Method Summaries

Tpe analytical Hrocedures used by tpe Environmental Division pave been develoHed from establisped internationally recogniUed Hrocedures sucp as tpose Hublisped by tpe =/ EP. &. PR. &. / and QEPM(Ml pouse develoHed Hrocedures are emHloyed in tpe absence of documented standards or by client re, uest(Tpe folloq ing reHort Hrovides brief descriHtions of tpe analytical Hrocedures emHloyed for results reHorted in tpe Certificate of . nalysis(/ ources from q picp . L/ metpods pave been develoHed are Hrovided q itpin tpe Metpod DescriHtions(

Analytical Methods	Method	Matrix	Method Descriptions
Per6and PolyfluoroalGyl / ubstances W?F. / k by LCM/ M/	EP371X6 T	O . TES	Ml6pouse: . nalysis of fresp and saline q aters by solid Hpase eztraction and LC6ElectrosHray6M/ 6M/ & Qegative Mode using MSM(Tpis metpod is targetted to Hristine environmental and drinGng q aters reHortin at sub6Harts Her trillion(O pere commercially available&isotoHically labelled analogues of tpe target analytes are used as internal standards for , uantification(O pere a labelled analogue is not commercially available&tpe internal standard q itp similar cpemistry and tpe closest retention time to tpe target is used for , uantification(Tpe D) I for internal standard resHonse is 0j 610j % of tpat establisped at initial calibration(PFI / is , uantified using a certified&traceable standard consisting of linear and brancped PFI / isomers(Tpis metpod comHlies q itp tpe , uality control definitions as stated in) / M 0(1(Data is revieq ed in line q itp tpe D) I s as stated in) / M0(1

Preparation Methods	Method	Matrix	Method Descriptions
/ PE HreHaration for LL and saline PFCs	EP3716 PE	O . TES	Ml pouse

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1816698**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: gwhitmore@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 18100235 Phase 4000/700	Page	: 1 of 2
Order number	: 18100235	Quote number	: EB2018GOLASS0004 (BN/112/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project Sam		
Sampler	: EMMA CORNISH		

Dates

Date Samples Received	: 10-Jul-2018 09:45	Issue Date	: 11-Jul-2018
Client Requested Due Date	: 18-Jul-2018	Scheduled Reporting Date	: **18-Jul-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 13.2°C - Ice Bricks present
Receipt Detail	: SMALL ESKY	No. of samples received / analysed	: 7 / 7

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised, analysis for sample "LPI_MW22_20180705" has been assigned as per client directive received from Emma Cornish on 11/07/2018.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

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	*Client sampling date / time*	*Client sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB1816698-001	05-Jul-2018 00:00	LPI_MW8_20180705	✓
EB1816698-002	05-Jul-2018 00:00	LPI_MW20_20180705	✓
EB1816698-003	05-Jul-2018 00:00	LPI_MW21_20180705	✓
EB1816698-004	05-Jul-2018 00:00	QC118_20180705	✓
EB1816698-005	05-Jul-2018 00:00	QC322_20180705	✓
EB1816698-006	05-Jul-2018 00:00	LPI_MW18_20180705	✓
EB1816698-007	05-Jul-2018 00:00	LPI_MW22_20180705	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

GREG WHITMORE

- *AU Certificate of Analysis - NATA (COA)	Email	gwhitmore@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gwhitmore@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gwhitmore@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gwhitmore@golder.com.au
- Chain of Custody (CoC) (COC)	Email	gwhitmore@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	gwhitmore@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	gwhitmore@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	gwhitmore@golder.com.au

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No: 4000/700 | Lab Name: ALS - Brisbane | Sampled By: E. Cornish | Site ID No.: Project Sites | Quote No.: EQ1121R

Turnaround Time: 24hrs ☐ 48hrs ☐ Standard ■ | 48hrs ☐ 5 Days ☐ | Date Required By:

Delivery Option: Email ☐ FAX ☐ Post ☐ Email ■ BULLETIN BOARD ☐

Report Format: PDF ■ EXCEL ■ EDIAT ■ ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD | 24 Ivory St, Col on, 4059 | Project Manager: Greg Williams | Job Contact: Emma Cornish | Phone: 0407 [illegible] | Fax: 07 [illegible] | Email: [illegible] | Phone: 07 [illegible] | Fax: 07 [illegible] | Email: [illegible]

GOLDER

Address: 2 High Street (cnr Shand St, York Street) Southport QLD 4215 AUSTRALIA

ANALYSIS REQUIRED

Comments/Special Instructions

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	List of Containers for Analysis/Comments	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Super Trace Long Suite (28 analytes) (EP231X-ST)	Comments
1	LPI-MW8-20180705		5/7/18	DS	WATER	1			X	
2	LPI-MW20-20180705		5/7/18	DS	WATER	1			X	
3	LPI-MW21-20180705		5/7/18	DS	WATER	1		[illegible]	X	
4	QC118-20180705		5/7/18	DS	WATER	1			X	
5	QC322-20180705		5/7/18	DS	WATER	1			X	
6	LPI-MW18-20180705		5/7/18	DS	WATER	1			X	
7	LPI-MW22-20180705		5/7/18	DS	WATER					

Environmental Division
Brisbane
Work Order Reference
EB1816698

Telephone : +61-7-3243 7222

SAMPLER MATRIX: Soil, Sediment, Rock, Wood Chips | MODULE TYPE: Groundwater, Surface Water, Leachate, Soil, Sediment, Rock, Wood Chips, Dust, Air, Swab, Tissue

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Cornish	GOLDER	9/7/18	10:00
RECEIVED BY	Jess H	ALS	10/7/18	9:05
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					
RECEIVED BY					

To Be Filled Out By Analysing Laboratory | LAB BATCH NUMBER

Security Seal: Intact / Broken | Cooler: [illegible] | 2nd Inv

Suitable Containers: Yes / No | Ice/Blocks: [illegible]

Condition: Satisfactory / Unsatisfactory

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1816906**	Page	: 1 of 15
Client	: **DOLi ER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 19-Jul-2018 11:05
Order number	: 18100235	Date Analysis Commenced	: 25-Jul-2018
C-O-C number	: ----	Issue Date	: 27-Jul-2018 14:57
Sampler	: SRIKAR RAPOLE		
Site	: Project Sam		
Quote number	: BN/112/18		
No. of samples received	: 30		
No. of samples analysed	: 30		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Addtrtoal f tarorp l rtoa herrtaean ro rstw rehorn b tff ue rogad ta rse roffob tac wehl rl re l rrl Qsp earw: y gl ftn Coarrof Rehorn/ y Awy C Cop hftl aQs Awwewwp ean ro l wwtwn b trs y gl ftn Re. teb l ad Sl p hfe ReQethnNortntQl rtoa^

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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
2 = 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.

- **Aal f, wtwb tff ue QpadgQred u, ALS Ea. troap earl f/ S, dae, / NATA l QQredtrl rtoa ao^850/ Stre No^1(Ml1 43 tQro wtre ao^19Ml) _^**

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA(MI716R5F5(18	SA(M) 716R5F5(18	SA(5G716R5F5(18	SA((M716R5F5(18	SA(56716R5F5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(1	EB18169G6R(5	EB18169G6R( )	EB18169G6R(9	EB18169G6R(0
					Result	Result	Result	Result	Result
E- 5) 1A: - errfgorol fk, f SgfroatQAQtdw									
- errfgorougrl ae wgfroatQl Qtd 4- FBS_	375-73-5	0.002	µg/L		<0.002	<0.002	(1(9	<0.002	<0.002
- errfgorohearl ae wgfroatQl Qtd 4- F- eS_	2706-91-4	0.002	µg/L		<0.002	<0.002	(1(9	<0.002	<0.002
- errfgorosexl ae wgfroatQl Qtd 4- FHxS_	355-46-4	0.002	µg/L		<0.002	(1(G	(15(	<0.002	(1(M
- errfgorosehrl ae wgfroatQl Qtd 4- FHhS_	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl ae wgfroatQl Qtd 4- FOS_	1763-23-1	0.002	µg/L		<0.002	<0.002	(119	<0.002	(1( )
- errfgorodeQl ae wgfroatQl Qtd 4- Fi S_	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1B: - errfgorol fk, f Cl ruox, ftQAQtdw									
- errfgorougrl aotQl Qtd 4- FBA_	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
- errfgorohearl aotQl Qtd 4- F- eA_	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl aotQl Qtd 4- FHxA_	307-24-4	0.002	µg/L		<0.002	<0.002	(1(G	<0.002	<0.002
- errfgorosehrl aotQl Qtd 4- FHhA_	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl aotQl Qtd 4- FOA_	335-67-1	0.002	µg/L		<0.002	<0.002	(1(5	<0.002	<0.002
- errfgoroaoal aotQl Qtd 4- FNA_	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorodeQl aotQl Qtd 4- Fi A_	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorogadeQl aotQl Qtd 4- FUai A_	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorododeQl aotQl Qtd 4- Fi oi A_	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgoromtdeQl aotQl Qtd 4- FTri A_	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgororemrl deQl aotQl Qtd 4- FTei A_	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1C: - errfgorol fk, f Sgfroal p tdew									
- errfgorooQrl ae wgfroal p tde 4FOSA_	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NR3 ens, f herrfgorooQrl ae wgfroal p tde 43 eFOSA_	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrfgorooQrl ae wgfroal p tde 4ErFOSA_	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA(MI716R6R5(18	SA(M) 716R6R5(18	SA(5G716R6R5(18	SA((M716R6R5(18	SA(56716R6R5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(1	EB18169G6R(5	EB18169G6R( )	EB18169G6R(9	EB18169G6R(0
					Result	Result	Result	Result	Result
E- 5) 1C: - errrfgorol fk, f Sgfroal p tdewPCoartaged									
NR3 ers, f herrrfgorooQrl ae wgfroal p tdoersl aof 43 eFOSE_	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrrfgorooQrl ae wgfroal p tdoersl aof 4ErFOSE_	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NR3 ers, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 43 eFOSAA_	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NREns, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 4ErFOSAA_	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1i : 4a:5_Ffgororrefop er SgfroatQAQtdw									
9:5 Ffgororrefop er wgfroatQl Qtd 49:5 FTS_	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
G:5 Ffgororrefop er wgfroatQl Qtd 4G:5 FTS_	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:5 Ffgororrefop er wgfroatQl Qtd 48:5 FTS_	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
1(:5 Ffgororrefop er wgfroatQl Qtd 41(:5 FTS_	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1- : - FAS Sgp w									
Sgp om- FAS	----	0.002	µg/L		<0.002	(‘((G	(‘(0(	<0.002	(‘(15
Sgp om- FHxS l ad - FOS	355-46-4/1763-23-1	0.002	µg/L		<0.002	(‘((G	(‘( ) 9	<0.002	(‘(15
Sgp om- FAS 4WA i ER Ltwn_	----	0.002	µg/L		<0.002	(‘((G	(‘(9G	<0.002	(‘(15
E- 5) 1S: - FAS Sgrrocl re									
1) C9R FOS	----	0.002	%		89‘)	G9‘G	G8‘5	6) ‘5	65‘(
1) C8R FOA	----	0.002	%		M6‘6	1(1	M8‘M	M) ‘(	89‘6

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA) 01716R5F5(18	SA1(6716R5F5(18	SA) 9M716R5F5(18	SA( ) 8716R5F5(18	SA(91716R5F5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(G	EB18169G6R(6	EB18169G6R(8	EB18169G6R(M	EB18169G6R 1(
					Result	Result	Result	Result	Result
E- 5) 1A: - errfgorol fk, f SgfroatQAQtdw									
- errfgorougrl ae wgfroatQl Qtd 4- FBS_	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorohearl ae wgfroatQl Qtd 4- F- eS_	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl ae wgfroatQl Qtd 4- FHxS_	355-46-4	0.002	µg/L		((9	<0.002	<0.002	<0.002	<0.002
- errfgorosehrl ae wgfroatQl Qtd 4- FHhS_	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl ae wgfroatQl Qtd 4- FOS_	1763-23-1	0.002	µg/L		((9	<0.002	<0.002	<0.002	(( )
- errfgorodeQl ae wgfroatQl Qtd 4- Fi S_	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1B: - errfgorol fk, f Cl ruox, ftQAQtdw									
- errfgorougrl aotQl Qtd 4- FBA_	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
- errfgorohearl aotQl Qtd 4- F- eA_	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl aotQl Qtd 4- FHxA_	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosehrl aotQl Qtd 4- FHhA_	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl aotQl Qtd 4- FOA_	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgoroaoal aotQl Qtd 4- FNA_	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorodeQl aotQl Qtd 4- Fi A_	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorogadeQl aotQl Qtd 4- FUai A_	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorododeQl aotQl Qtd 4- Fi oi A_	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgoromtdeQl aotQl Qtd 4- FTri A_	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgororemrl deQl aotQl Qtd 4- FTei A_	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1C: - errfgorol fk, f Sgfroal p tdew									
- errfgorooQrl ae wgfroal p tde 4FOSA_	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NR3 ens, f herrfgorooQrl ae wgfroal p tde 43 eFOSA_	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrfgorooQrl ae wgfroal p tde 4ErFOSA_	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA) 01716R6R5(18	SA1(6716R6R5(18	SA) 9M716R6R5(18	SA( ) 8716R6R5(18	SA(91716R6R5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(G	EB18169G6R(6	EB18169G6R(8	EB18169G6R(M	EB18169G6R 1(
					Result	Result	Result	Result	Result
E- 5) 1C: - errrfgorol fk, f Sgfroal p tdewPCoartaged									
NR3 ers, f herrrfgorooQrl ae wgfroal p tdoersl aof 43 eFOSE_	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrrfgorooQrl ae wgfroal p tdoersl aof 4ErFOSE_	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NR3 ers, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 43 eFOSAA_	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NREns, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 4ErFOSAA_	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1i : 4a:5_Ffgororrefop er SgfroatQAQtdw									
9:5 Ffgororrefop er wgfroatQl Qtd 49:5 FTS_	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
G:5 Ffgororrefop er wgfroatQl Qtd 4G:5 FTS_	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:5 Ffgororrefop er wgfroatQl Qtd 48:5 FTS_	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
1(:5 Ffgororrefop er wgfroatQl Qtd 41(:5 FTS_	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1- : - FAS Sgp w									
Sgp om- FAS	----	0.002	µg/L		(^(8	<0.002	<0.002	<0.002	(^((
Sgp om- FHxS l ad - FOS	355-46-4/1763-23-1	0.002	µg/L		(^(8	<0.002	<0.002	<0.002	(^((
Sgp om- FAS 4WA i ER Ltwn_	----	0.002	µg/L		(^(8	<0.002	<0.002	<0.002	(^((
E- 5) 1S: - FAS Sgrrocl re									
1) C9R FOS	----	0.002	%		G9^G	GG^5	65^M	G) ^G	GM^9
1) C8R FOA	----	0.002	%		85^5	80^0	M(^1	8M^5	M1^M

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_			Client sample ID	SA( ) 6716R5F5(18	SA( ) G716R5F5(18	SA( ) M716R5F5(18	SA) 0(716R5F5(18	SA11(716R5F5(18
			Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EB18169G6R(11	EB18169G6R(15	EB18169G6R(1)	EB18169G6R(19	EB18169G6R(10
				Result	Result	Result	Result	Result
E- 5) 1A: - errfgorol fk, f SgfroatQAQtdw								
- errfgorougrl ae wgfroatQl Qtd 4- FBS_	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorohearl ae wgfroatQl Qtd 4- F- eS_	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl ae wgfroatQl Qtd 4- FHxS_	355-46-4	0.002	µg/L	<0.002	<0.002	(1(M	<0.002	(1(9
- errfgorosehrl ae wgfroatQl Qtd 4- FHhS_	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl ae wgfroatQl Qtd 4- FOS_	1763-23-1	0.002	µg/L	<0.002	<0.002	(1(6	<0.002	<0.002
- errfgorodeQl ae wgfroatQl Qtd 4- Fi S_	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1B: - errfgorol fk, f Cl ruox, ftQAQtdw								
- errfgorougrl aotQl Qtd 4- FBA_	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
- errfgorohearl aotQl Qtd 4- F- eA_	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl aotQl Qtd 4- FHxA_	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosehrl aotQl Qtd 4- FHhA_	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl aotQl Qtd 4- FOA_	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgoroaoal aotQl Qtd 4- FNA_	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorodeQl aotQl Qtd 4- Fi A_	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorogadeQl aotQl Qtd 4- FUai A_	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorododeQl aotQl Qtd 4- Fi oi A_	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorortdeQl aotQl Qtd 4- FTri A_	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgororerrl deQl aotQl Qtd 4- FTei A_	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1C: - errfgorol fk, f Sgfroal p tdew								
- errfgorooQrl ae wgfroal p tde 4FOSA_	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
NR3 ers, f herrfgorooQrl ae wgfroal p tde 43 eFOSA_	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrfgorooQrl ae wgfroal p tde 4ErFOSA_	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA( ) 6716R5F5(18	SA( ) G716R5F5(18	SA( ) M716R5F5(18	SA) 0(716R5F5(18	SA11(716R5F5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(11	EB18169G6R(15	EB18169G6R(1)	EB18169G6R(19	EB18169G6R(10
					Result	Result	Result	Result	Result
E- 5) 1C: - errrfgorol fk, f Sgfroal p tdewPCoartaged									
NR3 ers, f herrrfgorooQrl ae wgfroal p tdoersl aof 43 eFOSE_	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrrfgorooQrl ae wgfroal p tdoersl aof 4ErFOSE_	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NR3 ers, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 43 eFOSAA_	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NREns, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 4ErFOSAA_	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1i : 4a:5_Ffgororrefop er SgfroatQAQtdw									
9:5 Ffgororrefop er wgfroatQl Qtd 49:5 FTS_	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
G:5 Ffgororrefop er wgfroatQl Qtd 4G5 FTS_	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:5 Ffgororrefop er wgfroatQl Qtd 48:5 FTS_	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
1(:5 Ffgororrefop er wgfroatQl Qtd 41(:5 FTS_	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1- : - FAS Sgp w									
Sgp om- FAS	----	0.002	µg/L		<0.002	<0.002	(‘(1G	<0.002	(‘(9
Sgp om- FHxS l ad - FOS	355-46-4/1763-23-1	0.002	µg/L		<0.002	<0.002	(‘(1G	<0.002	(‘(9
Sgp om- FAS 4WA i ER Ltwn_	----	0.002	µg/L		<0.002	<0.002	(‘(1G	<0.002	(‘(9
E- 5) 1S: - FAS Sgrrocl re									
1) C9R FOS	----	0.002	%		G9‘0	G0‘1	G(‘M	GG‘1	G(‘M
1) C8R FOA	----	0.002	%		M0‘)	M) ‘(	85‘5	65‘1	8(‘)

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA(16716R5F5(18	SA(5(716R5F5(18	SA(1) 716R5F5(18	SA(15716R5F5(18	SA(10718R5F5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	18-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(1G	EB18169G6R(16	EB18169G6R(18	EB18169G6R(1M	EB18169G6R(5(
					Result	Result	Result	Result	Result
E- 5) 1A: - errrfgorol fk, f SgfrnatQAQtdw									
- errrfgorougrl ae wgfrnatQl Qtd 4- FBS_	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	(‘(5	<0.002
- errrfgorohearl ae wgfrnatQl Qtd 4- F- eS_	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorosexl ae wgfrnatQl Qtd 4- FHxS_	355-46-4	0.002	µg/L		(‘(0	(‘(0	(‘( )	(‘(6	(‘( )
- errrfgorosehrl ae wgfrnatQl Qtd 4- FHhS_	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorooQrl ae wgfrnatQl Qtd 4- FOS_	1763-23-1	0.002	µg/L		<0.002	(‘(9	(‘(0	(‘(G	(‘(9
- errrfgorodeQl ae wgfrnatQl Qtd 4- Fi S_	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1B: - errrfgorol fk, f Cl ruox, ftQAQtdw									
- errrfgorougrl aotQl Qtd 4- FBA_	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
- errrfgorohearl aotQl Qtd 4- F- eA_	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorosexl aotQl Qtd 4- FHxA_	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorosehrl aotQl Qtd 4- FHhA_	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgoroQrl aotQl Qtd 4- FOA_	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgoroaoal aotQl Qtd 4- FNA_	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorodeQl aotQl Qtd 4- Fi A_	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorogadeQl aotQl Qtd 4- FUai A_	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorododeQl aotQl Qtd 4- Fi oi A_	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgorornrtdeQl aotQl Qtd 4- FTri A_	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errrfgororenrl deQl aotQl Qtd 4- FTei A_	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1C: - errrfgorol fk, f Sgfrnal p tdew									
- errrfgoroQrl ae wgfrnal p tde 4FOSA_	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NR3 ens, f herrrfgorooQrl ae wgfrnal p tde 43 eFOSA_	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrrfgorooQrl ae wgfrnal p tde 4ErFOSA_	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA(16716R6R5(18	SA(5(716R6R5(18	SA(1) 716R6R5(18	SA(15716R6R5(18	SA(10718R6R5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	18-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(1G	EB18169G6R(16	EB18169G6R(18	EB18169G6R(1M	EB18169G6R(5(
					Result	Result	Result	Result	Result
E- 5) 1C: - errrfgorol fk, f Sgfroal p tdewPCoartaged									
NR3 ers, f herrrfgorooQrl ae wgfroal p tdoersl aof 43 eFOSE_	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrrfgorooQrl ae wgfroal p tdoersl aof 4ErFOSE_	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NR3 ers, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 43 eFOSAA_	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NREns, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 4ErFOSAA_	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1i : 4a:5_Ffgororrefop er SgfroatQAQtdw									
9:5 Ffgororrefop er wgfroatQl Qtd 49:5 FTS_	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
G:5 Ffgororrefop er wgfroatQl Qtd 4G5 FTS_	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:5 Ffgororrefop er wgfroatQl Qtd 48:5 FTS_	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
1(:5 Ffgororrefop er wgfroatQl Qtd 41(:5 FTS_	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1- : - FAS Sgp w									
Sgp om- FAS	----	0.002	µg/L		(‘(0	(‘(M	(‘(8	(‘(10	(‘(6
Sgp om- FHxS l ad - FOS	355-46-4/1763-23-1	0.002	µg/L		(‘(0	(‘(M	(‘(8	(‘(1)	(‘(6
Sgp om- FAS 4WA i ER Ltwn_	----	0.002	µg/L		(‘(0	(‘(M	(‘(8	(‘(10	(‘(6
E- 5) 1S: - FAS Sgrrocl re									
1) C9R FOS	----	0.002	%		G0‘0	89‘9	60‘9	GG‘9	69‘5
1) C8R FOA	----	0.002	%		80‘G	1(5	1((	86‘6	11G

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_			Client sample ID	SA(19716R5R5(18	TWi 718R5R5(18	L- TA716R5R5(18	A- T716R5R5(18	y C11M716R5R5(18
			Client sampling date / time	17-Jul-2018 00:00	18-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EB18169G6R 51	EB18169G6R 55	EB18169G6R 5)	EB18169G6R 59	EB18169G6R 50
				Result	Result	Result	Result	Result
E- 5) 1A: - errfgorol fk, f SgfroatQAQtdw								
- errfgorougrl ae wgfroatQl Qtd 4- FBS_	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorohearl ae wgfroatQl Qtd 4- F- eS_	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl ae wgfroatQl Qtd 4- FHxS_	355-46-4	0.002	µg/L	(7(0	(7(5	(7(0	<0.002	<0.002
- errfgorosehrl ae wgfroatQl Qtd 4- FHhS_	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl ae wgfroatQl Qtd 4- FOS_	1763-23-1	0.002	µg/L	(7(9	<0.002	(7( )	<0.002	<0.002
- errfgorodeQl ae wgfroatQl Qtd 4- Fi S_	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1B: - errfgorol fk, f Cl ruox, ftQAQtdw								
- errfgorougrl aotQl Qtd 4- FBA_	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
- errfgorohearl aotQl Qtd 4- F- eA_	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl aotQl Qtd 4- FHxA_	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosehrl aotQl Qtd 4- FHhA_	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl aotQl Qtd 4- FOA_	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgoroaoal aotQl Qtd 4- FNA_	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorodeQl aotQl Qtd 4- Fi A_	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorogadeQl aotQl Qtd 4- FUai A_	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorododeQl aotQl Qtd 4- Fi oi A_	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorortdeQl aotQl Qtd 4- FTri A_	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
- errfgororerrl deQl aotQl Qtd 4- FTei A_	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1C: - errfgorol fk, f Sgfroal p tdew								
- errfgorooQrl ae wgfroal p tde 4FOSA_	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
NR3 ers, f herrfgorooQrl ae wgfroal p tde 43 eFOSA_	31506-32-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrfgorooQrl ae wgfroal p tde 4ErFOSA_	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	SA(19716R6R5(18	TWi 718R6R5(18	L- TA716R6R5(18	A- T716R6R5(18	y C11M716R6R5(18
				Client sampling date / time	17-Jul-2018 00:00	18-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(51	EB18169G6R(55	EB18169G6R(5)	EB18169G6R(59	EB18169G6R(50
					Result	Result	Result	Result	Result
E- 5) 1C: - errrfgorol fk, f Sgfroal p tdewPCoartaged									
NR3 ers, f herrrfgorooQrl ae wgfroal p tdoersl aof 43 eFOSE_	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrrfgorooQrl ae wgfroal p tdoersl aof 4ErFOSE_	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NR3 ers, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 43 eFOSAA_	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NREns, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 4ErFOSAA_	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1i : 4a:5_Ffgororrefop er SgfroatQAQtdw									
9:5 Ffgororrefop er wgfroatQl Qtd 49:5 FTS_	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
G:5 Ffgororrefop er wgfroatQl Qtd 4G5 FTS_	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:5 Ffgororrefop er wgfroatQl Qtd 48:5 FTS_	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
1(:5 Ffgororrefop er wgfroatQl Qtd 41(:5 FTS_	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1- : - FAS Sgp w									
Sgp om- FAS	----	0.002	µg/L		(‘((M	(‘((5	(‘((8	<0.002	<0.002
Sgp om- FHxS l ad - FOS	355-46-4/1763-23-1	0.002	µg/L		(‘((M	(‘((5	(‘((8	<0.002	<0.002
Sgp om- FAS 4WA i ER Ltwn_	----	0.002	µg/L		(‘((M	(‘((5	(‘((8	<0.002	<0.002
E- 5) 1S: - FAS Sgrrocl re									
1) C9R FOS	----	0.002	%		80‘(	89‘M	G1‘(	65‘5	GM‘G
1) C8R FOA	----	0.002	%		11)	111	86‘5	1(0	1(5

Analytical Results

Sub-Matrix: WATER
4Matrix: WATER_

Compound	CAS Number	LOR	Unit	Client sample ID	y C15(716R6R5(18	y C151716R6R5(18	y C) 5) 716R6R5(18	y C919716R6R5(18	y C910716R6R5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	18-Jul-2018 00:00	19-Jul-2018 00:00
					EB18169G6R(5G	EB18169G6R(56	EB18169G6R(58	EB18169G6R(5M	EB18169G6R( ) (
					Result	Result	Result	Result	Result
E- 5) 1A: - errfgorol fk, f SgfroatQAQtdw									
- errfgorougrl ae wgfroatQl Qtd 4- FBS_	375-73-5	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorohearl ae wgfroatQl Qtd 4- F- eS_	2706-91-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl ae wgfroatQl Qtd 4- FHxS_	355-46-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosehrl ae wgfroatQl Qtd 4- FHhS_	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl ae wgfroatQl Qtd 4- FOS_	1763-23-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorodeQl ae wgfroatQl Qtd 4- Fi S_	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1B: - errfgorol fk, f Cl ruox, ftQAQtdw									
- errfgorougrl aotQl Qtd 4- FBA_	375-22-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	<0.01
- errfgorohearl aotQl Qtd 4- F- eA_	2706-90-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosexl aotQl Qtd 4- FHxA_	307-24-4	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorosehrl aotQl Qtd 4- FHhA_	375-85-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorooQrl aotQl Qtd 4- FOA_	335-67-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgoroaoal aotQl Qtd 4- FNA_	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorodeQl aotQl Qtd 4- Fi A_	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorogadeQl aotQl Qtd 4- FUai A_	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgorododeQl aotQl Qtd 4- Fi oi A_	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgoromtdeQl aotQl Qtd 4- FTri A_	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
- errfgororemrl deQl aotQl Qtd 4- FTei A_	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1C: - errfgorol fk, f Sgfroal p tdew									
- errfgorooQrl ae wgfroal p tde 4FOSA_	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NR3 ers, f herrfgorooQrl ae wgfroal p tde 43 eFOSA_	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrfgorooQrl ae wgfroal p tde 4ErFOSA_	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER 4Matrix: WATER_				Client sample ID	y C15(716R6R5(18	y C151716R6R5(18	y C) 5) 716R6R5(18	y C919716R6R5(18	y C910716R6R5(18
				Client sampling date / time	17-Jul-2018 00:00	17-Jul-2018 00:00	17-Jul-2018 00:00	18-Jul-2018 00:00	19-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EB18169G6R(5G	EB18169G6R(56	EB18169G6R(58	EB18169G6R(5M	EB18169G6R) (
					Result	Result	Result	Result	Result
E- 5) 1C: - errrfgorol fk, f Sgfroal p tdewPCoartaged									
NR3 ers, f herrrfgorooQrl ae wgfroal p tdoersl aof 43 eFOSE_	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NREns, f herrrfgorooQrl ae wgfroal p tdoersl aof 4ErFOSE_	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
NR3 ers, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 43 eFOSAA_	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
NREns, f herrrfgorooQrl ae wgfroal p tdol QertQl Qtd 4ErFOSAA_	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1i : 4a:5_Ffgororrefop er SgfroatQAQtdw									
9:5 Ffgororrefop er wgfroatQl Qtd 49:5 FTS_	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
G:5 Ffgororrefop er wgfroatQl Qtd 4G:5 FTS_	27619-97-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
8:5 Ffgororrefop er wgfroatQl Qtd 48:5 FTS_	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
1(:5 Ffgororrefop er wgfroatQl Qtd 41(:5 FTS_	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E- 5) 1- : - FAS Sgp w									
Sgp om- FAS	----	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Sgp om- FHxS l ad - FOS	355-46-4/1763-23-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Sgp om- FAS 4WA i ER Ltwn_	----	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E- 5) 1S: - FAS Sgrrocl re									
1) C9R FOS	----	0.002	%		G8'0	G8'9	G)'G	G5'M	G)'0
1) C8R FOA	----	0.002	%		8MM	8G'9	MM'6	MB'6	8MM

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
E- 5) 1S: - FAS Sgrrocl re			
1) C9R FOS	----	60	120
1) C8R FOA	----	60	120

Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1817467**	Page	: 1 of 11
y l@i b	: **GOLDER ASSOCIATES**	6aLoratort	: ni E@oi v ei bal m@S@oi Dr@Lai e
y oi baBb	: c M R MnR G WHTc I Mn	y oi baBb	: y arstbei n v r@O
hAAress	: P I Dl d 12SN c h6TI Q , 6mUh4 8 TMh 6Hh N07N	hAAress	: 5 Dt bO 8 breeb 8 bafforA , 6m h ustbral@ N03S
TelepCoi e	: ----	TelepCoi e	: +71-2-S5NS 2555
ProjeBb	: 1/ 1005S3	mate 8av ples MeBe@eA	: 1J-(ul-501/
I rAer i uv Ler	: 1/ 1005S3	mate hi alt s@ y ov v ei BeA	: 53-(ul-501/
y -I -y i uv Ler	: ----	Hsue mate	: 52-(ul-501/
8av pler	: 8MHJ hM Mh Pl 6n		
8@e	: ProjeBb 8av		
, uobe i uv Ler	: DQvl 15wl/		
Qo. of sav ples reBe@eA	: S0		
Qo. of sav ples ai alt seA	: S0		

TO@ reporbsuperseAes ai t preE@ous reporbs; k @O b O@ referei Be. Mesulbs applt bo bOe sav plexs; as suLv @beA. TO@ AoBuv ei bsOall i obLe reproAuBeAUezBepb@C full.
TO@ , ual@t y oi brol MeporbBoi ba@C s bOe follok @C g @C forv ab@i :

- 6aLoratort mupl@eabe xm4 P; Meporb9MelabEe PerBei bage m@ferei Be xMPm; ai A h BBeptai Be 6V @s
- c eb@oA Dlai q xc D; ai A 6aLoratort y oi brol 8 p@e x6y 8; Meporb9MeBoEert ai A h BBeptai Be 6V @s
- c abr@2 8 p@e xc 8; Meporb9MeBoEert ai A h BBeptai Be 6V @s

Signatories

TO@ AoBuv ei bOas Leei eleBbroi @allt s@i eA Lt bOe aub Oor@eA s@i abor@s Lelok . nleBbroi @s s@i @C g @s BarR@eA oub@C Bov pl@ai Be k @O proBeAures speB@eA @C 51 y FM Parb11.

Signatories	*Position*	*Accreditation Category*
Frai Bo 6ei b@C		8t Ai et I rgai @sU8v @O f@lAUQ8G

General Comments

TOe ai alt bCal proBeAures useA Lt bOe ni E@oi v ei bal mOEGSOi CaEe Leei AeEelopeA frov estaLlGSOeA Cteri abOi allt reBogi GeA proBeAures suBO as bOose puLlGSOeA Lt bOe 48nPhU hPWhU h8 ai A QnPc . Hl Oouse AeEelopeA proBeAures are ev plot eA C bOe aLsei Be of AoBuv ei beA sbai AarAs or Lt EHGi bre=uesb

GOere v oGsure Aeterv CatiOi Oas Leei perforv eAUresults are reporteA oi a Art k e@CoLasGs.

GOere a reporteA less bOai x#; resulbGs O@Oer bOai bOe 6I MUbOGs v at Le Aue bo prQ art sav ple ezbraBwA@estabe AOubOi ai Awor CsuffO@i bsav ple for ai alt sGs. GOere bOe 6I M of a reporteA resulbAOfers frov stai AarA 6I MUbOGs v at Le Aue bo O@C

) et : hi oi t v ous K Mefers bo sav ples k OEBO are i obspeBOOallt parbof bOGs k orq orAer Lubforv eA parbof bOe , y proBess lob
y h8 Quv Ler K y h8 reg@ort i uv Ler frov AabaLase v aCbaCeA Lt y Oev @al hLsbraBbs 8 erE@es. TOe y Oev @al hLsbraBbs 8 erE@e G a AOEGSOi of bOe hv er@ai y Oev @al 8 oB@bt .
6I M K 6Q COof reportsCg
MPm K MelabOEe PerBei bage mOferei Be
% K HiAO@abes faOeA , y

Laboratory Duplicate (DUP) Report

TOe =ualOt Boi brol terv 6aLoratort muplO@abe refers bo a rai Aov lt seleBeA CbralaLoratort splO 6aLoratort AuplO@abes proE@Ae COforv abOi regarACg v ebOoA preBSOi ai A sav ple Oeterogei eOt. TOe perv OeA rai ges for bOe MelabOEe PerBei b meE@abOi xMPm; of 6aLoratort muplO@abes are speBOOA C h68 c ebOoA , GHnQvS/ ai A are Aepei Aei b oi bOe v agi QuAe of results C Bov parGoi bo bOe leEel of reportsCg: Mesulb # 10 bQ es 6I M: Qo 6Q O@MesulbLetk eei 10 ai A 50 bQ es 6I M: 0> - 30> 9MesulbX 50 bQ es 6I M: 0> - 50> .

8uL-c abr@: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1826702)									
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: PerfluoroLubai e sulfoi @aBOA xPFD8;	S23-2S-3	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: Perfluoropei bai e sulfoi @aBOA xPFPe8;	5207-J1-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluoroOezai e sulfoi @aBOA xPFWz8;	S33-N7-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluoroOepbai e sulfoi @aBOA xPFWp8;	S23-J5-/	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluorooBai e sulfoi @aBOA xPFI 8;	127S-5S-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluoroAeBai e sulfoi @aBOA xPFm8;	SS3-22-S	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
nD1/ 12N72-011	8h0S2_12-2-501/	nP5S1d-66: PerfluoroLubai e sulfoi @aBOA xPFD8;	S23-2S-3	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: Perfluoropei bai e sulfoi @aBOA xPFPe8;	5207-J1-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluoroOezai e sulfoi @aBOA xPFWz8;	S33-N7-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluoroOepbai e sulfoi @aBOA xPFWp8;	S23-J5-/	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluorooBai e sulfoi @aBOA xPFI 8;	127S-5S-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
		nP5S1d-66: PerfluoroAeBai e sulfoi @aBOA xPFm8;	SS3-22-S	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1826706)									
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: PerfluoroLubai e sulfoi @aBOA xPFD8;	S23-2S-3	0.005	µgv8	#0.005	#0.005	0.00	Qo 6Q O@

8uL-c abr@: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1826706) - continued									
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: Perfluoropei tai e sulfoi CBaBXA xPFPe8;	5207-J1-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCezai e sulfoi CBaBXA xPFWz8;	S33-N7-N	0.005	µgv8	0.00S	0.00S	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCeptai e sulfoi CBaBXA xPFWp8;	S23-J5-/	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluorooBtai e sulfoi CBaBXA xPFI 8;	127S-5S-1	0.005	µgv8	0.00N	0.00S	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroAeBai e sulfoi CBaBXA xPFm8;	SS3-22-S	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
nD1/ 12N72-0S0	, yN13_12-2-501/	nP5S1d-66: PerfluoroLutai e sulfoi CBaBXA xPFD8;	S23-2S-3	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: Perfluoropei tai e sulfoi CBaBXA xPFPe8;	5207-J1-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCezai e sulfoi CBaBXA xPFWz8;	S33-N7-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCeptai e sulfoi CBaBXA xPFWp8;	S23-J5-/	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluorooBtai e sulfoi CBaBXA xPFI 8;	127S-5S-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroAeBai e sulfoi CBaBXA xPFm8;	SS3-22-S	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1826702)									
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: Perfluoropei tai oCBaBXA xPFPeh;	5207-J0-S	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCezai oCBaBXA xPFWzh;	S02-5N-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCeptai oCBaBXA xPFWph;	S23-/ 3-J	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluorooBtai oCBaBXA xPFI h;	SS3-72-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: Perfluoroi oi ai oCBaBXA xPFQh;	S23-J3-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroAeBai oCBaBXA xPFmh;	SS3-27-5	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: Perfluorooui AeBai oCBaBXA xPF4 imh;	503/ -JN-/	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroAoAeBai oCBaBXA xPFmomh;	S02-33-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluorobrCAeBai oCBaBXA xPFTrmh;	2575J-JN-/	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluorotetraAeBai oCBaBXA xPFTemh;	S27-07-2	0.003	µgv8	#0.003	#0.003	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroLutai oCBaBXA xPFDh;	S23-55-N	0.01	µgv8	#0.01	#0.01	0.00	Qo 6V Cb
nD1/ 12N72-011	8h0S2_12-2-501/	nP5S1d-66: Perfluoropei tai oCBaBXA xPFPeh;	5207-J0-S	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCezai oCBaBXA xPFWzh;	S02-5N-N	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroCeptai oCBaBXA xPFWph;	S23-/ 3-J	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluorooBtai oCBaBXA xPFI h;	SS3-72-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: Perfluoroi oi ai oCBaBXA xPFQh;	S23-J3-1	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: PerfluoroAeBai oCBaBXA xPFmh;	SS3-27-5	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb
		nP5S1d-66: Perfluorooui AeBai oCBaBXA xPF4 imh;	503/ -JN-/	0.005	µgv8	#0.005	#0.005	0.00	Qo 6V Cb

8uL-c abr@: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1826702) - continued									
nD1/ 12N72-011	8h0S2_12-2-501/	nP5S1d-66: PerfluoroAoAeBai oGaBQAxPFmomh;	S02-33-1	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorobrQeBai oGaBQAxPFTrmh;	2575J-JN-/	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorotetraAeBai oGaBQA xPFTemh;	S27-07-2	0.003	µgv6	#0.003	#0.003	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroLutai oGaBQAxPFDh;	S23-55-N	0.01	µgv6	#0.01	#0.01	0.00	Qo 6Q Q
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1826706)									
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: Perfluoropei tai oGaBQAxPFPeh;	5207-J0-S	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroOezai oGaBQAxPFWzh;	S02-5N-N	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroOeptai oGaBQAxPFWph;	S23-/ 3-J	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorooBtai oGaBQAxPFI h;	SS3-72-1	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: Perfluoroi oi ai oGaBQAxPFQh;	S23-J3-1	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroAeBai oGaBQAxPFmh;	SS3-27-5	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: Perfluoroui AeBai oGaBQAxPF4 i mh;	503/ -JN-/	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroAoAeBai oGaBQAxPFmomh;	S02-33-1	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorobrQeBai oGaBQAxPFTrmh;	2575J-JN-/	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorotetraAeBai oGaBQA xPFTemh;	S27-07-2	0.003	µgv6	#0.003	#0.003	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroLutai oGaBQAxPFDh;	S23-55-N	0.01	µgv6	#0.01	#0.01	0.00	Qo 6Q Q
nD1/ 12N72-0S0	, yNt13_12-2-501/	nP5S1d-66: Perfluoropei tai oGaBQAxPFPeh;	5207-J0-S	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroOezai oGaBQAxPFWzh;	S02-5N-N	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroOeptai oGaBQAxPFWph;	S23-/ 3-J	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorooBtai oGaBQAxPFI h;	SS3-72-1	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: Perfluoroi oi ai oGaBQAxPFQh;	S23-J3-1	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroAeBai oGaBQAxPFmh;	SS3-27-5	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: Perfluoroui AeBai oGaBQAxPF4 i mh;	503/ -JN-/	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroAoAeBai oGaBQAxPFmomh;	S02-33-1	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorobrQeBai oGaBQAxPFTrmh;	2575J-JN-/	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: PerfluorotetraAeBai oGaBQA xPFTemh;	S27-07-2	0.003	µgv6	#0.003	#0.003	0.00	Qo 6Q Q
		nP5S1d-66: PerfluoroLutai oGaBQAxPFDh;	S23-55-N	0.01	µgv6	#0.01	#0.01	0.00	Qo 6Q Q
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1826702)									
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: PerfluorooBtai e sulfoi av QAe xFI 8h;	23N-J1-7	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: Q-c etOI perfluorooBtai e sulfoi av QAoaBetGBaBQAxc eFI 8hh;	5S33-S1-J	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: Q-ntOI perfluorooBtai e sulfoi av QAoaBetGBaBQAxntFI 8hh;	5JJ1-30-7	0.005	µgv6	#0.005	#0.005	0.00	Qo 6Q Q
		nP5S1d-66: Q-c etOI perfluorooBtai e sulfoi av QAe xc eFI 8h;	S1307-S5-/	0.003	µgv6	#0.003	#0.003	0.00	Qo 6Q Q
		nP5S1d-66: Q-ntOI perfluorooBtai e sulfoi av QAe xntFI 8h;	Nt131-30-5	0.003	µgv6	#0.003	#0.003	0.00	Qo 6Q Q

8uL-c abr@: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1826702) - continued									
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @AoetOai ol xc eFl 8n;	5NNV -0J-2	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @AoetOai ol xnbFl 8n;	17J1-JJ-5	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
nD1/ 12N72-011	8h0S2_12-2-501/	nP5S1d-66: PerfluorooBtai e sulfoi av @Ae xFl 8h;	23N-J1-7	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @AoaBetB@aB@A xc eFl 8hh;	5S33-S1-J	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @AoaBetB@aB@A xnbFl 8hh;	5JJ1-30-7	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @Ae xc eFl 8h;	S1307-S5-/	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @Ae xnbFl 8h;	N131-30-5	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @AoetOai ol xc eFl 8n;	5NNV -0J-2	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @AoetOai ol xnbFl 8n;	17J1-JJ-5	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1826706)									
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: PerfluorooBtai e sulfoi av @Ae xFl 8h;	23N-J1-7	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @AoaBetB@aB@A xc eFl 8hh;	5S33-S1-J	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @AoaBetB@aB@A xnbFl 8hh;	5JJ1-30-7	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @Ae xc eFl 8h;	S1307-S5-/	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @Ae xnbFl 8h;	N131-30-5	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @AoetOai ol xc eFl 8n;	5NNV -0J-2	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @AoetOai ol xnbFl 8n;	17J1-JJ-5	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
nD1/ 12N72-0S0	, yN13_12-2-501/	nP5S1d-66: PerfluorooBtai e sulfoi av @Ae xFl 8h;	23N-J1-7	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @AoaBetB@aB@A xc eFl 8hh;	5S33-S1-J	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @AoaBetB@aB@A xnbFl 8hh;	5JJ1-30-7	0.005	µgv8	#0.005	#0.005	0.00	Qo 6@ @
		nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @Ae xc eFl 8h;	S1307-S5-/	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @Ae xnbFl 8h;	N131-30-5	0.003	µgv8	#0.003	#0.003	0.00	Qo 6@ @

8uL-c abr@: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1826706) - continued									
nD1/ 12N72-0S0	, yN13_12-2-501/	nP5S1d-66: Q-c etOl perfluorooBtai e sulfoi av @oetOai ol xc eFl 8n;	5NNV-0J-2	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: Q-nbOl perfluorooBtai e sulfoi av @oetOai ol xnbFl 8n;	17J1-JJ-5	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1826702)									
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: N:5 Fluorotelov er sulfoi @aB@AxN:5 FT8;	23215N-25-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 7:5 Fluorotelov er sulfoi @aB@Ax7:5 FT8;	5271J-J2-5	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: /:5 Fluorotelov er sulfoi @aB@Ax/:5 FT8;	SJ10/-SN-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 10:5 Fluorotelov er sulfoi @aB@A x10:5 FT8;	150557-70-0	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
nD1/ 12N72-011	8h0S2_12-2-501/	nP5S1d-66: N:5 Fluorotelov er sulfoi @aB@AxN:5 FT8;	23215N-25-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 7:5 Fluorotelov er sulfoi @aB@Ax7:5 FT8;	5271J-J2-5	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: /:5 Fluorotelov er sulfoi @aB@Ax/:5 FT8;	SJ10/-SN-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 10:5 Fluorotelov er sulfoi @aB@A x10:5 FT8;	150557-70-0	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1826706)									
nD1/ 12N72-050	8h013_1/-2-501/	nP5S1d-66: N:5 Fluorotelov er sulfoi @aB@AxN:5 FT8;	23215N-25-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 7:5 Fluorotelov er sulfoi @aB@Ax7:5 FT8;	5271J-J2-5	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: /:5 Fluorotelov er sulfoi @aB@Ax/:5 FT8;	SJ10/-SN-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 10:5 Fluorotelov er sulfoi @aB@A x10:5 FT8;	150557-70-0	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
nD1/ 12N72-0S0	, yN13_12-2-501/	nP5S1d-66: N:5 Fluorotelov er sulfoi @aB@AxN:5 FT8;	23215N-25-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 7:5 Fluorotelov er sulfoi @aB@Ax7:5 FT8;	5271J-J2-5	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: /:5 Fluorotelov er sulfoi @aB@Ax/:5 FT8;	SJ10/-SN-N	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @
		nP5S1d-66: 10:5 Fluorotelov er sulfoi @aB@A x10:5 FT8;	150557-70-0	0.003	µgv6	#0.003	#0.003	0.00	Qo 60V @

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

TOe =ualC1 Boi trol terv c etOoA w6aLoratort Dlai q refers bo ai ai alt be free v abr2 bo k OBO all reagei ts are aAAeA C bOe sav e Eoluv es or proporbOi s as useA C sbai AarA sav ple preparabOi . TOe purpose of bOS , y parav eter G bo v oi Cbr pobei bal laLoratort Boi tav CatbOi . TOe =ualC1 Boi trol terv 6aLoratort y oi trol 8pQe x6y 8; refers bo a BerbBQA referei Be v aterQlU or a qi ok i Cberferei Be free v abr2 spQeA k CO bargeb ai alt tes. TOe purpose of bOS , y parav eter G bo v oi Cbr v etOoA preBSOi ai A aBBuraBt CAepei Aei bof sav ple v abr2. mt i av GMeBoEert 6Q Cbs are LaseA oi sbatSt Bal eEaluabOi of proBesseA 6y 8.

8uL-c abr2: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1826702)								
nP5S1d-66: PerfluoroLubai e sulfoi GBaBQAxPFD8;	S23-2S-3	0.005	µgv6	#0.005	0.03 µgv6	27./	30	1S0
nP5S1d-66: Perfluoropei bai e sulfoi GBaBQAxPFPe8;	5207-J1-N	0.005	µgv6	#0.005	0.03 µgv6	/ J.7	30	1S0
nP5S1d-66: PerfluoroOezai e sulfoi GBaBQAxPFWz8;	S33-N7-N	0.005	µgv6	#0.005	0.03 µgv6	2S./	30	1S0
nP5S1d-66: PerfluoroOeptai e sulfoi GBaBQAxPFWp8;	S23-J5-/	0.005	µgv6	#0.005	0.03 µgv6	/ 1.0	30	1S0
nP5S1d-66: PerfluorooBtai e sulfoi GBaBQAxPFI 8;	127S-5S-1	0.005	µgv6	#0.005	0.03 µgv6	7/ .7	30	1S0
nP5S1d-66: PerfluoroAeBai e sulfoi GBaBQAxPFm8;	SS3-22-S	0.005	µgv6	#0.005	0.03 µgv6	35.0	ND	1S0
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1826706)								
nP5S1d-66: PerfluoroLubai e sulfoi GBaBQAxPFD8;	S23-2S-3	0.005	µgv6	#0.005	0.03 µgv6	22.0	30	1S0
nP5S1d-66: Perfluoropei bai e sulfoi GBaBQAxPFPe8;	5207-J1-N	0.005	µgv6	#0.005	0.03 µgv6	2J.7	30	1S0
nP5S1d-66: PerfluoroOezai e sulfoi GBaBQAxPFWz8;	S33-N7-N	0.005	µgv6	#0.005	0.03 µgv6	/ 1.7	30	1S0
nP5S1d-66: PerfluoroOeptai e sulfoi GBaBQAxPFWp8;	S23-J5-/	0.005	µgv6	#0.005	0.03 µgv6	/ 2.7	30	1S0
nP5S1d-66: PerfluorooBtai e sulfoi GBaBQAxPFI 8;	127S-5S-1	0.005	µgv6	#0.005	0.03 µgv6	7N.0	30	1S0
nP5S1d-66: PerfluoroAeBai e sulfoi GBaBQAxPFm8;	SS3-22-S	0.005	µgv6	#0.005	0.03 µgv6	/ 7.7	ND	1S0
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1826702)								
nP5S1d-66: PerfluoroLubai oGBaBQAxPFDh;	S23-55-N	0.01	µgv6	#0.01	0.53 µgv6	3/ ./	30	1S0
nP5S1d-66: Perfluoropei bai oGBaBQAxPFPeh;	5207-J0-S	0.005	µgv6	#0.005	0.03 µgv6	2N.0	30	1S0
nP5S1d-66: PerfluoroOezai oGBaBQAxPFWzh;	S02-5N-N	0.005	µgv6	#0.005	0.03 µgv6	/ 7.N	30	1S0
nP5S1d-66: PerfluoroOeptai oGBaBQAxPFWph;	S23-/ 3-J	0.005	µgv6	#0.005	0.03 µgv6	2/ .7	30	1S0
nP5S1d-66: PerfluorooBtai oGBaBQAxPFI h;	SS3-72-1	0.005	µgv6	#0.005	0.03 µgv6	2J.0	30	1S0
nP5S1d-66: Perfluoroi oi ai oGBaBQAxPFQh;	S23-J3-1	0.005	µgv6	#0.005	0.03 µgv6	3/ .7	30	1S0
nP5S1d-66: PerfluoroAeBai oGBaBQAxPFmh;	SS3-27-5	0.005	µgv6	#0.005	0.03 µgv6	31.0	30	1S0
nP5S1d-66: Perfluorooui AeBai oGBaBQAxPF4 i mh;	503/ -JN-/	0.005	µgv6	#0.005	0.03 µgv6	N2.5	ND	1S0
nP5S1d-66: PerfluoroAoAeBai oGBaBQAxPFmomh;	S02-33-1	0.005	µgv6	#0.005	0.03 µgv6	NS.0	ND	1S0
nP5S1d-66: PerfluorobQAeBai oGBaBQAxPFTrmh;	2575J-JN-/	0.005	µgv6	#0.005	0.03 µgv6	NN.0	ND	1S0
nP5S1d-66: PerfluorotetraAeBai oGBaBQAxPFTemh;	S27-07-2	0.003	µgv6	#0.003	0.153 µgv6	N5.5	ND	1S0
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1826706)								
nP5S1d-66: PerfluoroLubai oGBaBQAxPFDh;	S23-55-N	0.01	µgv6	#0.01	0.53 µgv6	21./	30	1S0
nP5S1d-66: Perfluoropei bai oGBaBQAxPFPeh;	5207-J0-S	0.005	µgv6	#0.005	0.03 µgv6	2J.7	30	1S0
nP5S1d-66: PerfluoroOezai oGBaBQAxPFWzh;	S02-5N-N	0.005	µgv6	#0.005	0.03 µgv6	2N.0	30	1S0
nP5S1d-66: PerfluoroOeptai oGBaBQAxPFWph;	S23-/ 3-J	0.005	µgv6	#0.005	0.03 µgv6	/ 2.5	30	1S0
nP5S1d-66: PerfluorooBtai oGBaBQAxPFI h;	SS3-72-1	0.005	µgv6	#0.005	0.03 µgv6	27.N	30	1S0
nP5S1d-66: Perfluoroi oi ai oGBaBQAxPFQh;	S23-J3-1	0.005	µgv6	#0.005	0.03 µgv6	3/ .0	30	1S0
nP5S1d-66: PerfluoroAeBai oGBaBQAxPFmh;	SS3-27-5	0.005	µgv6	#0.005	0.03 µgv6	7S.7	30	1S0
nP5S1d-66: Perfluorooui AeBai oGBaBQAxPF4 i mh;	503/ -JN-/	0.005	µgv6	#0.005	0.03 µgv6	102	ND	1S0

8uL-c abr@: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1826706) - continued								
nP5S1d-66: PerfluoroAoAeBai oCBaBQAxPFmomh;	S02-33-1	0.005	µgv6	#0.005	0.03 µgv6	37.5	ND	1S0
nP5S1d-66: PerfluorobrQeBai oCBaBQAxPFTrmh;	2575J-JN-/	0.005	µgv6	#0.005	0.03 µgv6	3S.N	ND	1S0
nP5S1d-66: PerfluorobtbraAeBai oCBaBQAxPFTemh;	S27-07-2	0.003	µgv6	#0.003	0.153 µgv6	71.3	ND	1S0
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1826702)								
nP5S1d-66: PerfluoroobBai e sulfoi av QAe xFl 8h;	23N-J1-7	0.005	µgv6	#0.005	0.03 µgv6	NJ.5	ND	1S0
nP5S1d-66: Q-c ebQl perfluoroobBai e sulfoi av QAe xc eFl 8h;	S1307-S5-/	0.003	µgv6	#0.003	0.153 µgv6	N7.J	ND	1S0
nP5S1d-66: Q-nbQl perfluoroobBai e sulfoi av QAe xnbFl 8h;	N131-30-5	0.003	µgv6	#0.003	0.153 µgv6	NJ.N	ND	1S0
nP5S1d-66: Q-c ebQl perfluoroobBai e sulfoi av QAoebQai ol xc eFl 8n;	5NNNV-0J-2	0.003	µgv6	#0.003	0.153 µgv6	31./	30	1S0
nP5S1d-66: Q-nbQl perfluoroobBai e sulfoi av QAoebQai ol xnbFl 8n;	17J1-JJ-5	0.003	µgv6	#0.003	0.153 µgv6	3N./	ND	1S0
nP5S1d-66: Q-c ebQl perfluoroobBai e sulfoi av QAoaBebQB aBQAxc eFl 8hh;	5S33-S1-J	0.005	µgv6	#0.005	0.03 µgv6	3S.N	30	1S0
nP5S1d-66: Q-nbQl perfluoroobBai e sulfoi av QAoaBebQB aBQAxnbFl 8hh;	5JJ1-30-7	0.005	µgv6	#0.005	0.03 µgv6	30./	ND	1S0
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1826706)								
nP5S1d-66: PerfluoroobBai e sulfoi av QAe xFl 8h;	23N-J1-7	0.005	µgv6	#0.005	0.03 µgv6	35.N	ND	1S0
nP5S1d-66: Q-c ebQl perfluoroobBai e sulfoi av QAe xc eFl 8h;	S1307-S5-/	0.003	µgv6	#0.003	0.153 µgv6	NJ.N	ND	1S0
nP5S1d-66: Q-nbQl perfluoroobBai e sulfoi av QAe xnbFl 8h;	N131-30-5	0.003	µgv6	#0.003	0.153 µgv6	NS.0	ND	1S0
nP5S1d-66: Q-c ebQl perfluoroobBai e sulfoi av QAoebQai ol xc eFl 8n;	5NNNV-0J-2	0.003	µgv6	#0.003	0.153 µgv6	71./	30	1S0
nP5S1d-66: Q-nbQl perfluoroobBai e sulfoi av QAoebQai ol xnbFl 8n;	17J1-JJ-5	0.003	µgv6	#0.003	0.153 µgv6	N0./	ND	1S0
nP5S1d-66: Q-c ebQl perfluoroobBai e sulfoi av QAoaBebQB aBQAxc eFl 8hh;	5S33-S1-J	0.005	µgv6	#0.005	0.03 µgv6	3S.5	30	1S0
nP5S1d-66: Q-nbQl perfluoroobBai e sulfoi av QAoaBebQB aBQAxnbFl 8hh;	5JJ1-30-7	0.005	µgv6	#0.005	0.03 µgv6	72.N	ND	1S0
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1826702)								
nP5S1d-66: N:5 Fluorobelov er sulfoi CBaBQAxN:5 FT8;	23215N-25-N	0.003	µgv6	#0.003	0.03 µgv6	/ / .7	30	1S0
nP5S1d-66: 7:5 Fluorobelov er sulfoi CBaBQAx7:5 FT8;	5271J-J2-5	0.003	µgv6	#0.003	0.03 µgv6	/ 5.5	30	1S0
nP5S1d-66: / :5 Fluorobelov er sulfoi CBaBQAx/ :5 FT8;	SJ10/ -SN-N	0.003	µgv6	#0.003	0.03 µgv6	23.0	30	1S0
nP5S1d-66: 10:5 Fluorobelov er sulfoi CBaBQAx10:5 FT8;	150557-70-0	0.003	µgv6	#0.003	0.03 µgv6	7N.N	30	1S0
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1826706)								
nP5S1d-66: N:5 Fluorobelov er sulfoi CBaBQAxN:5 FT8;	23215N-25-N	0.003	µgv6	#0.003	0.03 µgv6	102	30	1S0
nP5S1d-66: 7:5 Fluorobelov er sulfoi CBaBQAx7:5 FT8;	5271J-J2-5	0.003	µgv6	#0.003	0.03 µgv6	/ 1.0	30	1S0
nP5S1d-66: / :5 Fluorobelov er sulfoi CBaBQAx/ :5 FT8;	SJ10/ -SN-N	0.003	µgv6	#0.003	0.03 µgv6	7N.0	30	1S0
nP5S1d-66: 10:5 Fluorobelov er sulfoi CBaBQAx10:5 FT8;	150557-70-0	0.003	µgv6	#0.003	0.03 µgv6	/ 7.5	30	1S0

Matrix Spike (MS) Report

TOe =ual@i Boi brol berv c abr@2 8pQe xc 8; refers bo ai CbralaLorabort splC sav ple spQeA k@O a represei baBEe seb of bargeb ai alt bes. TOe purpose of bOS , y parav eber Gs bo v oi @br poteibal v abr@2 effeBos oi ai alt be reBoEer@s. 8babB MeBoEert 60 @s as per laLorabort maba , ual@i l LjeBBEes xm, l s;. hveal reBoEert rai ges sbateA v at Le k aGeeA C bOe eEei bof sav ple v abr@2 Cberferei Be.

8uL-c abr@2: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1826702)							
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: PerfluoroLubai e sulfoi @BaB@AxPFD8;	S23-2S-3	0.03 µgv6	J2.5	30	1S0
		nP5S1d-66: Perfluoropei bai e sulfoi @BaB@AxPFPe8;	5207-J1-N	0.03 µgv6	11J	30	1S0
		nP5S1d-66: PerfluoroOezai e sulfoi @BaB@AxPFWz8;	S33-N7-N	0.03 µgv6	150	30	1S0
		nP5S1d-66: PerfluoroOeptai e sulfoi @BaB@AxPFWp8;	S23-J5-/	0.03 µgv6	11N	30	1S0
		nP5S1d-66: PerfluorooBai e sulfoi @BaB@AxPFI 8;	127S-5S-1	0.03 µgv6	/ 3.7	30	1S0
		nP5S1d-66: PerfluoroAeBai e sulfoi @BaB@AxPFm8;	SS3-22-S	0.03 µgv6	N3./	S0	1S0
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1826706)							
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: PerfluoroLubai e sulfoi @BaB@AxPFD8;	S23-2S-3	0.03 µgv6	/ 3.0	30	1S0
		nP5S1d-66: Perfluoropei bai e sulfoi @BaB@AxPFPe8;	5207-J1-N	0.03 µgv6	JS.0	30	1S0
		nP5S1d-66: PerfluoroOezai e sulfoi @BaB@AxPFWz8;	S33-N7-N	0.03 µgv6	J5.5	30	1S0
		nP5S1d-66: PerfluoroOeptai e sulfoi @BaB@AxPFWp8;	S23-J5-/	0.03 µgv6	JJ.0	30	1S0
		nP5S1d-66: PerfluorooBai e sulfoi @BaB@AxPFI 8;	127S-5S-1	0.03 µgv6	7/ ./	30	1S0
		nP5S1d-66: PerfluoroAeBai e sulfoi @BaB@AxPFm8;	SS3-22-S	0.03 µgv6	3S.0	S0	1S0
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1826702)							
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: PerfluoroLubai o@BaB@AxPFDh;	S23-55-N	0.53 µgv6	J1./	S0	1S0
		nP5S1d-66: Perfluoropei bai o@BaB@AxPFPeh;	5207-J0-S	0.03 µgv6	11N	30	1S0
		nP5S1d-66: PerfluoroOezai o@BaB@AxPFWzh;	S02-5N-N	0.03 µgv6	11N	30	1S0
		nP5S1d-66: PerfluoroOeptai o@BaB@AxPFWph;	S23-/ 3-J	0.03 µgv6	11S	30	1S0
		nP5S1d-66: PerfluorooBai o@BaB@AxPFI h;	SS3-72-1	0.03 µgv6	11S	30	1S0
		nP5S1d-66: Perfluoroi oi ai o@BaB@AxPFQh;	S23-J3-1	0.03 µgv6	/ 5.N	30	1S0
		nP5S1d-66: PerfluoroAeBai o@BaB@AxPFmh;	SS3-27-5	0.03 µgv6	25.N	30	1S0
		nP5S1d-66: Perfluoroui AeBai o@BaB@AxPF4 imh;	503/ -JN-/	0.03 µgv6	2J.N	S0	1S0
		nP5S1d-66: PerfluoroAoAeBai o@BaB@AxPFmomh;	S02-33-1	0.03 µgv6	37.N	S0	1S0
		nP5S1d-66: Perfluorobr@eBai o@BaB@AxPFTrmh;	2575J-JN-/	0.03 µgv6	71.0	S0	1S0
		nP5S1d-66: PerfluorobebraAeBai o@BaB@AxPFTemh;	S27-07-2	0.153 µgv6	3J.0	S0	1S0
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1826706)							
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: PerfluoroLubai o@BaB@AxPFDh;	S23-55-N	0.53 µgv6	/ 5.0	S0	1S0
		nP5S1d-66: Perfluoropei bai o@BaB@AxPFPeh;	5207-J0-S	0.03 µgv6	/ / ./	30	1S0
		nP5S1d-66: PerfluoroOezai o@BaB@AxPFWzh;	S02-5N-N	0.03 µgv6	/ 7.0	30	1S0
		nP5S1d-66: PerfluoroOeptai o@BaB@AxPFWph;	S23-/ 3-J	0.03 µgv6	J/ .7	30	1S0
		nP5S1d-66: PerfluorooBai o@BaB@AxPFI h;	SS3-72-1	0.03 µgv6	/ 3.7	30	1S0
		nP5S1d-66: Perfluoroi oi ai o@BaB@AxPFQh;	S23-J3-1	0.03 µgv6	75.N	30	1S0
		nP5S1d-66: PerfluoroAeBai o@BaB@AxPFmh;	SS3-27-5	0.03 µgv6	31.5	30	1S0
		nP5S1d-66: Perfluoroui AeBai o@BaB@AxPF4 imh;	503/ -JN-/	0.03 µgv6	/ S.0	S0	1S0

8uL-c abr@: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1826706) - continued							
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: PerfluoroAoAeBai oCBaBQAxPFmomh;	S02-33-1	0.03 µgv6	SS.7	S0	1S0
		nP5S1d-66: PerfluorobrQeBai oCBaBQAxPFTrmh;	2575J-JN-/	0.03 µgv6	S0.5	S0	1S0
		nP5S1d-66: PerfluorobebraAeBai oCBaBQAxPFTemh;	S27-07-2	0.153 µgv6	N7.2	S0	1S0
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1826702)							
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: PerfluorooBai e sulfoi av QAe xFl 8h;	23N-J1-7	0.03 µgv6	3J.5	S0	1S0
		nP5S1d-66: Q-c ebQl perfluorooBai e sulfoi av QAe xc eFl 8h;	S1307-S5-/	0.153 µgv6	N2.0	S0	1S0
		nP5S1d-66: Q-nbQl perfluorooBai e sulfoi av QAe xnbFl 8h;	N131-30-5	0.153 µgv6	S7.7	S0	1S0
		nP5S1d-66: Q-c ebQl perfluorooBai e sulfoi av QAoebQai ol xc eFl 8n;	5NNV -0J-2	0.153 µgv6	NJ.0	S0	1S0
		nP5S1d-66: Q-nbQl perfluorooBai e sulfoi av QAoebQai ol xnbFl 8n;	17J1-JJ-5	0.153 µgv6	30.0	S0	1S0
		nP5S1d-66: Q-c ebQl perfluorooBai e sulfoi av QAoaBebQBaBQAxc eFl 8hh;	5S33-S1-J	0.03 µgv6	N3./	S0	1S0
		nP5S1d-66: Q-nbQl perfluorooBai e sulfoi av QAoaBebQBaBQAxnbFl 8hh;	5JJ1-30-7	0.03 µgv6	3J.0	S0	1S0
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1826706)							
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: PerfluorooBai e sulfoi av QAe xFl 8h;	23N-J1-7	0.03 µgv6	37./	S0	1S0
		nP5S1d-66: Q-c ebQl perfluorooBai e sulfoi av QAe xc eFl 8h;	S1307-S5-/	0.153 µgv6	NS.N	S0	1S0
		nP5S1d-66: Q-nbQl perfluorooBai e sulfoi av QAe xnbFl 8h;	N131-30-5	0.153 µgv6	NJ.5	S0	1S0
		nP5S1d-66: Q-c ebQl perfluorooBai e sulfoi av QAoebQai ol xc eFl 8n;	5NNV -0J-2	0.153 µgv6	S3.3	S0	1S0
		nP5S1d-66: Q-nbQl perfluorooBai e sulfoi av QAoebQai ol xnbFl 8n;	17J1-JJ-5	0.153 µgv6	NN.N	S0	1S0
		nP5S1d-66: Q-c ebQl perfluorooBai e sulfoi av QAoaBebQBaBQAxc eFl 8hh;	5S33-S1-J	0.03 µgv6	73./	S0	1S0
		nP5S1d-66: Q-nbQl perfluorooBai e sulfoi av QAoaBebQBaBQAxnbFl 8hh;	5JJ1-30-7	0.03 µgv6	/ 0./	S0	1S0
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1826702)							
nD1/ 12N72-001	8h0J1_12-2-501/	nP5S1d-66: N:5 Fluorotelov er sulfoi CBaBQAxN:5 FT8;	23215N-25-N	0.03 µgv6	11J	30	1S0
		nP5S1d-66: 7:5 Fluorotelov er sulfoi CBaBQAx7:5 FT8;	5271J-J2-5	0.03 µgv6	117	30	1S0
		nP5S1d-66: / :5 Fluorotelov er sulfoi CBaBQAx/ :5 FT8;	SJ10/ -SN-N	0.03 µgv6	J3.7	30	1S0
		nP5S1d-66: 10:5 Fluorotelov er sulfoi CBaBQAx10:5 FT8;	150557-70-0	0.03 µgv6	75./	30	1S0
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1826706)							
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: N:5 Fluorotelov er sulfoi CBaBQAxN:5 FT8;	23215N-25-N	0.03 µgv6	102	30	1S0

8uL-c abr@: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1826706) - continued							
nD1/ 12N72-050	8h013_1/ -2-501/	nP5S1d-66: 7:5 Fluorotelov er sulfoi (3aB@Ax7:5 FT8;	5271J-J2-5	0.03 µgv6	J2./	30	1S0
		nP5S1d-66: / :5 Fluorotelov er sulfoi (3aB@Ax/ :5 FT8;	SJ10/ -SN-N	0.03 µgv6	/ 2.7	30	1S0
		nP5S1d-66: 10:5 Fluorotelov er sulfoi (3aB@Ax10:5 FT8;	150557-70-0	0.03 µgv6	3S.N	30	1S0

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1817467**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Telephone	: +61-7-3243 7222
Project	: 18100235	Date Samples Received	: 19-Jul-2018
Site	: Project Sam	Issue Date	: 27-Jul-2018
Sampler	: SRIKAR RAPOLE	No. of samples received	: 30
Order number	: 18100235	No. of samples analysed	: 30

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL)							
SA091_17-7-2018, SA093_17-7-2018, SA026_17-7-2018, SA009_17-7-2018, SA027_17-7-2018, SA351_17-7-2018, SA107_17-7-2018, SA349_17-7-2018, SA038_17-7-2018, SA041_17-7-2018, SA037_17-7-2018, SA036_17-7-2018, SA039_17-7-2018, SA350_17-7-2018, APT_17-7-2018, SA110_17-7-2018, SA017_17-7-2018, SA020_17-7-2018, SA013_17-7-2018, SA012_17-7-2018, SA014_17-7-2018, LPTA_17-7-2018, QC119_17-7-2018, QC120_17-7-2018, QC121_17-7-2018, QC323_17-7-2018	**17-Jul-2018**	**25-Jul-2018**	13-Jan-2019	✓	**26-Jul-2018**	13-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
SA015_18-7-2018, TWD_18-7-2018, QC414_17-7-2018	**18-Jul-2018**	**25-Jul-2018**	14-Jan-2019	✓	**26-Jul-2018**	14-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
QC415_17-7-2018	**19-Jul-2018**	**25-Jul-2018**	15-Jan-2019	✓	**26-Jul-2018**	15-Jan-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL)							
SA091_17-7-2018, SA093_17-7-2018, SA026_17-7-2018, SA009_17-7-2018, SA027_17-7-2018, SA351_17-7-2018, SA107_17-7-2018, SA349_17-7-2018, SA038_17-7-2018, SA041_17-7-2018, SA037_17-7-2018, SA036_17-7-2018, SA039_17-7-2018, SA350_17-7-2018, APT_17-7-2018, SA110_17-7-2018, SA017_17-7-2018, SA020_17-7-2018, SA013_17-7-2018, SA012_17-7-2018, SA014_17-7-2018, LPTA_17-7-2018, QC119_17-7-2018, QC120_17-7-2018, QC121_17-7-2018, QC323_17-7-2018	**17-Jul-2018**	**25-Jul-2018**	13-Jan-2019	✓	**26-Jul-2018**	13-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
SA015_18-7-2018, TWD_18-7-2018, QC414_17-7-2018	**18-Jul-2018**	**25-Jul-2018**	14-Jan-2019	✓	**26-Jul-2018**	14-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
QC415_17-7-2018	**19-Jul-2018**	**25-Jul-2018**	15-Jan-2019	✓	**26-Jul-2018**	15-Jan-2019	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-LL)							
SA091_17-7-2018, SA093_17-7-2018, SA026_17-7-2018, SA009_17-7-2018, SA027_17-7-2018, SA351_17-7-2018, SA107_17-7-2018, SA349_17-7-2018, SA038_17-7-2018, SA041_17-7-2018, SA037_17-7-2018, SA036_17-7-2018, SA039_17-7-2018, SA350_17-7-2018, APT_17-7-2018, SA110_17-7-2018, SA017_17-7-2018, SA020_17-7-2018, SA013_17-7-2018, SA012_17-7-2018, SA014_17-7-2018, LPTA_17-7-2018, QC119_17-7-2018, QC120_17-7-2018, QC121_17-7-2018, QC323_17-7-2018	**17-Jul-2018**	**25-Jul-2018**	13-Jan-2019	✓	**26-Jul-2018**	13-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
SA015_18-7-2018, TWD_18-7-2018, QC414_17-7-2018	**18-Jul-2018**	**25-Jul-2018**	14-Jan-2019	✓	**26-Jul-2018**	14-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
QC415_17-7-2018	**19-Jul-2018**	**25-Jul-2018**	15-Jan-2019	✓	**26-Jul-2018**	15-Jan-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL)							
SA091_17-7-2018, SA093_17-7-2018, SA026_17-7-2018, SA009_17-7-2018, SA027_17-7-2018, SA351_17-7-2018, SA107_17-7-2018, SA349_17-7-2018, SA038_17-7-2018, SA041_17-7-2018, SA037_17-7-2018, SA036_17-7-2018, SA039_17-7-2018, SA350_17-7-2018, APT_17-7-2018, SA110_17-7-2018, SA017_17-7-2018, SA020_17-7-2018, SA013_17-7-2018, SA012_17-7-2018, SA014_17-7-2018, LPTA_17-7-2018, QC119_17-7-2018, QC120_17-7-2018, QC121_17-7-2018, QC323_17-7-2018	**17-Jul-2018**	**25-Jul-2018**	13-Jan-2019	✓	**26-Jul-2018**	13-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
SA015_18-7-2018, TWD_18-7-2018, QC414_17-7-2018	**18-Jul-2018**	**25-Jul-2018**	14-Jan-2019	✓	**26-Jul-2018**	14-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
QC415_17-7-2018	**19-Jul-2018**	**25-Jul-2018**	15-Jan-2019	✓	**26-Jul-2018**	15-Jan-2019	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-LL)							
SA091_17-7-2018, SA093_17-7-2018, SA026_17-7-2018, SA009_17-7-2018, SA027_17-7-2018, SA351_17-7-2018, SA107_17-7-2018, SA349_17-7-2018, SA038_17-7-2018, SA041_17-7-2018, SA037_17-7-2018, SA036_17-7-2018, SA039_17-7-2018, SA350_17-7-2018, APT_17-7-2018, SA110_17-7-2018, SA017_17-7-2018, SA020_17-7-2018, SA013_17-7-2018, SA012_17-7-2018, SA014_17-7-2018, LPTA_17-7-2018, QC119_17-7-2018, QC120_17-7-2018, QC121_17-7-2018, QC323_17-7-2018	**17-Jul-2018**	**25-Jul-2018**	13-Jan-2019	✓	**26-Jul-2018**	13-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
SA015_18-7-2018, TWD_18-7-2018, QC414_17-7-2018	**18-Jul-2018**	**25-Jul-2018**	14-Jan-2019	✓	**26-Jul-2018**	14-Jan-2019	✓
HDPE (no PTFE) (EP231X-LL)							
QC415_17-7-2018	**19-Jul-2018**	**25-Jul-2018**	15-Jan-2019	✓	**26-Jul-2018**	15-Jan-2019	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	4	30	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

LAB ID	SAMPLE ID	SAMPLE DATE/TIME	SAMPLE TYPE	SAMPLE MATRIX	No. OF CONTAINERS	Leader Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) Low Level (EP231X-LL)	PFAS - Super Trace Long Suite (28 analytes) (EP231X-ST)
1	SA091_17-7-2018	17/07/2018		Water	1	Unknown	X	
2	SA093_17-7-2018	17/07/2018		Water	1	Unknown	X	
3	SA026_17-7-2018	17/07/2018		Water	1	Unknown	X	
4	SA009_17-7-2018	17/07/2018		Water	1	Unknown	X	
5	SA027_17-7-2018	17/07/2018		Water	1	Unknown	X	
6	SA351_17-7-2018	17/07/2018		Water	1	Unknown	X	
7	SA107_17-7-2018	17/07/2018		Water	1	Unknown	X	
8	SA349_17-7-2018	17/07/2018		Water	1	Unknown	X	
9	SA038_17-7-2018	17/07/2018		Water	1	Unknown	X	
10	SA041_17-7-2018	17/07/2018		Water	1	Unknown	X	

GOLDER

Environmental Division
Brisbane
Work Order Reference
EB1817467

Telephone : +61-7-3243 7222

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Dan B	19/7/18	ALS	11:05.

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal — Chilled — Yes / No

Bubble Cushions — Frozen — Ambient

Cool Box — Ambient

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

LAB ID	SAMPLE ID	SAMPLE DATE	SAMPLE TIME	SAMPLE TYPE	SAMPLE MATRIX	No. CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS – Full Suite (28 Analytes) Low Level (EP231X-LL)	PFAS – Super Trace Long Suite (26 analytes) (EP231X-ST)	Comments
11	SA037_17-7-2018		17/07/2018		Water	1	Unknown	X		
12	SA036_17-7-2018		17/07/2018		Water	1	Unknown	X		
13	SA39_17-7-2018		17/07/2018		Water	1	Unknown	X		
14	SA350_17-7-2018		17/07/2018		Water	1	Unknown	X		
15	SA110_17-7-2018		17/07/2018		Water	1	Unknown	X		
16	SA017_17-7-2018		17/07/2018		Water	1	Unknown	X		
17	SA020_17-7-2018		17/07/2018		Water	1	Unknown	X		
18	SA013_17-7-2018		17/07/2018		Water	1	Unknown	X		
19	SA012_17-7-2018		17/07/2018		Water	1	Unknown	X		
20	SA015_18-7-2018		18/07/2018		Water	1	Unknown	X		

	Dan B	ALS	19/7/18	11-05.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18108253 Phase: 2000	Lab Name:	ALS - Brisbane
Site ID No.:	Site Location: Project Area	Quote No.	BN/112/18
Sampled By:	Status/ Reports	Order No.:	
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ■	Address:	16 Mt Street (cnr Shand & Hyde Street) Stafford QLD 4053 AUSTRALIA
	36hrs ☐ 5 Days ☐ Date Required By:		
Delivery Option:	HARD ☐ FAX ☐ RISK ☐ EMAIL ■	BULLETIN BOARD	☐
Report Format:	PDF ■ EXCEL ■ EDAT ■	ENVIROSYS	■

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Greg Whitmore Reviewed:
Job Contact: Emma Cornish Phone: 0407734971 Email:
Phone: 07 4054 8200
Fax: 07 4054 8201
GOLDER

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	SAMPLE TYPE	No. of containers	Level/Concentration (Low/Medium/High)	PFAS - Full Suite (28 Analytes) Low Level (EP231X-LL)	PFAS - Short Tone Long Suite (28 analytes) (EP231X-ST)	Comments
21	SA014_17-7-2018		17/07/2018		Water	1	Unknown	X		
22	TWD_18-7-2018		18/07/2018		Water	1	Unknown	X		
23	UPEA_17-7-2018		17/07/2018		Water	1	Unknown	X		
24	APT_17-7-2018		17/07/2018		Water	1	Unknown	X		
25	QC119_17-7-2018		17/07/2018		Water	1	Unknown	X		
26	QC120_17-7-2018		17/07/2018		Water	1	Unknown	X		
27	QC121_17-7-2018		17/07/2018		Water	1	Unknown	X		
28	QC323_17-7-2018		17/07/2018		Water	1	Unknown	X		
29	QC414_17-7-2018		18/07/2018		Water	1	Unknown	X		
30	QC415_17-7-2018		18/07/2018		Water	1	Unknown	X		

SAMPLE HANDLING	SIGNATURE(S)	COMPANY	DATE	TIME
RELEASED BY:	Dan.B	ALS	19/7/18	11.05
ACCEPTED BY:				
RELEASED BY:				
ACCEPTED BY:				
RELEASED BY:				
ACCEPTED BY:				

SAMPLE RECEIPT NOTIFICATION	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RECEIVED BY:					
RECEIVED BY:					

To Be Filled Out By Analyzing Laboratory

LAB HANDLING

Security Seal		Chilled		Yes/No	
Bubble Containers		Frozen		Ambient	
Cool Temp		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIERS; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1817467**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: gwhitmore@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 18100235	Page	: 1 of 3
Order number	: 18100235	Quote number	: EB2018GOLASS0004 (BN/112/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project Sam		
Sampler	: SRIKAR RAPOLE		

Dates

Date Samples Received	: 19-Jul-2018 11:05	Issue Date	: 20-Jul-2018
Client Requested Due Date	: 26-Jul-2018	Scheduled Reporting Date	: **26-Jul-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 30 / 30

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised, there was a sample ID mismatch between the Chain of Custody and label for two samples. Sample "TWD 17" had a sample label "TWD18" and sample "QC120" had a sample label "QC220". These samples have been matched due to ID similarity and being the only two with any discrepancy and for reporting purposes the chain of custody naming convention has been applied. If you would like to provide an alternate name please contact Client Services at ALSEnviro.Brisbane@alsglobal.com**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- **Samples 'QC219_17-7-2018' and 'QC220_17-7-2018' have been forwarded to Eurofins as requested.**

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP231X-LL (EB) PFAS - Full Suite Low Level (28 analytes)
EB1817467-001	17-Jul-2018 00:00	SA091_17-7-2018	✓
EB1817467-002	17-Jul-2018 00:00	SA093_17-7-2018	✓
EB1817467-003	17-Jul-2018 00:00	SA026_17-7-2018	✓
EB1817467-004	17-Jul-2018 00:00	SA009_17-7-2018	✓
EB1817467-005	17-Jul-2018 00:00	SA027_17-7-2018	✓
EB1817467-006	17-Jul-2018 00:00	SA351_17-7-2018	✓
EB1817467-007	17-Jul-2018 00:00	SA107_17-7-2018	✓
EB1817467-008	17-Jul-2018 00:00	SA349_17-7-2018	✓
EB1817467-009	17-Jul-2018 00:00	SA038_17-7-2018	✓
EB1817467-010	17-Jul-2018 00:00	SA041_17-7-2018	✓
EB1817467-011	17-Jul-2018 00:00	SA037_17-7-2018	✓
EB1817467-012	17-Jul-2018 00:00	SA036_17-7-2018	✓
EB1817467-013	17-Jul-2018 00:00	SA039_17-7-2018	✓
EB1817467-014	17-Jul-2018 00:00	SA350_17-7-2018	✓
EB1817467-015	17-Jul-2018 00:00	SA110_17-7-2018	✓
EB1817467-016	17-Jul-2018 00:00	SA017_17-7-2018	✓
EB1817467-017	17-Jul-2018 00:00	SA020_17-7-2018	✓
EB1817467-018	17-Jul-2018 00:00	SA013_17-7-2018	✓
EB1817467-019	17-Jul-2018 00:00	SA012_17-7-2018	✓
EB1817467-020	18-Jul-2018 00:00	SA015_18-7-2018	✓
EB1817467-021	17-Jul-2018 00:00	SA014_17-7-2018	✓
EB1817467-022	18-Jul-2018 00:00	TWD_18-7-2018	✓
EB1817467-023	17-Jul-2018 00:00	LPTA_17-7-2018	✓
EB1817467-024	17-Jul-2018 00:00	APT_17-7-2018	✓
EB1817467-025	17-Jul-2018 00:00	QC119_17-7-2018	✓
EB1817467-026	17-Jul-2018 00:00	QC120_17-7-2018	✓
EB1817467-027	17-Jul-2018 00:00	QC121_17-7-2018	✓
EB1817467-028	17-Jul-2018 00:00	QC323_17-7-2018	✓
EB1817467-029	18-Jul-2018 00:00	QC414_17-7-2018	✓
EB1817467-030	19-Jul-2018 00:00	QC415_17-7-2018	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

GREG WHITMORE

- *AU Certificate of Analysis - NATA (COA)	Email	gwhitmore@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gwhitmore@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gwhitmore@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gwhitmore@golder.com.au
- Chain of Custody (CoC) (COC)	Email	gwhitmore@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	gwhitmore@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	gwhitmore@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	gwhitmore@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1817464**	Page	: 1 of 29
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 14-Jun-2018 12:06
Order number	: 18100235	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 22-Jun-2018 14:51
Sampler	: ----		
Site	: PROJECT SAM		
Quote number	: BN/112/18		
No. of samples received	: 67		
No. of samples analysed	: 61		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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.

- EP231: Matrix spike recovery bias low due to sample matrix interferences

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	EWHEQ-MW-01	EWHEQ-MW-02	EWHEQ-MW-03	EWHEQ-MW-04	EWHEQ-MW-05
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
					ES1817464-001	ES1817464-002	ES1817464-003	ES1817464-004	ES1817464-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0008**	**0.0046**	**0.0022**	**0.0008**	**0.0074**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0007**	**0.0040**	**0.0019**	**0.0005**	**0.0085**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0102**	**0.0384**	**0.0158**	**0.0045**	**0.0862**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0005**	**0.0022**	**0.0010**	<0.0005	**0.0055**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0049**	**0.0329**	**0.0171**	**0.0041**	**0.156**
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	0.002	µg/L		<0.002	**0.002**	**0.002**	**0.004**	**0.018**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0107**	**0.0086**	**0.0089**	**0.172**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0111**	**0.0078**	**0.0048**	**0.155**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0034**	**0.0023**	**0.0014**	**0.0895**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0019**	**0.0011**	<0.0005	**0.0112**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0010**
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)				Client sample ID	EWHEQ-MW-01	EWHEQ-MW-02	EWHEQ-MW-03	EWHEQ-MW-04	EWHEQ-MW-05
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-001	ES1817464-002	ES1817464-003	ES1817464-004	ES1817464-005
					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	**0.005**	**0.003**	**0.028**	**0.020**
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 PFAS	----	0.0003	µg/L		**0.0171**	**0.116**	**0.0628**	**0.0570**	**0.730**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0151**	**0.0713**	**0.0329**	**0.0086**	**0.242**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0159**	**0.110**	**0.0599**	**0.0565**	**0.715**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**81.9**	**77.6**	**61.8**	**71.2**	**61.6**
13C8-PFOA	----	0.0005	%		**117**	**115**	**93.3**	**76.5**	**93.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	HOS-SA/254	HOS-SA/2	HOS-SA/4	HOS-SA/249	LDP-MW-10
				Client sampling date / time	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-006	ES1817464-007	ES1817464-008	ES1817464-009	ES1817464-010
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0011**	<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	**0.0090**	**0.0007**	**0.0072**	**0.0026**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		<0.0003	**0.0149**	<0.0003	**0.0058**	**0.0018**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	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	**0.0033**	<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
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0009**	<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)				Client sample ID	HOS-SA/254	HOS-SA/2	HOS-SA/4	HOS-SA/249	LDP-MW-10
				Client sampling date / time	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-006	ES1817464-007	ES1817464-008	ES1817464-009	ES1817464-010
					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		**0.001**	<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 PFAS	----	0.0003	µg/L		**0.0010**	**0.0298**	**0.0007**	**0.0135**	**0.0044**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	**0.0239**	**0.0007**	**0.0130**	**0.0044**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0010**	**0.0292**	**0.0007**	**0.0135**	**0.0044**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**83.0**	**65.5**	**60.7**	**70.1**	**74.3**
13C8-PFOA	----	0.0005	%		**96.5**	**72.7**	**85.0**	**106**	**96.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LDP-MW-13	LDP-MW-34	LPI-MW-08	LPI-MW-20	LPI-MW-21
				Client sampling date / time	03-Jun-2018 00:00	03-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-011	ES1817464-012	ES1817464-013	ES1817464-014	ES1817464-015
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0006**	**0.0009**	**0.179**	**0.0015**	**0.0390**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0007**	**0.211**	**0.0014**	**0.0574**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0049**	**0.0107**	**1.50**	**0.0229**	**0.439**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	**0.131**	**0.0011**	**0.0315**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0056**	**0.0148**	**2.00**	**0.0421**	**0.696**
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	0.002	µg/L		<0.002	<0.002	**0.026**	<0.002	**0.014**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	**0.0961**	**0.0013**	**0.0297**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0014**	**0.339**	**0.0044**	**0.108**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0013**	**0.0972**	**0.0033**	**0.0504**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0020**	**0.156**	**0.0033**	**0.0631**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	<0.0005	**0.0050**	<0.0005	**0.0021**
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)				Client sample ID	LDP-MW-13	LDP-MW-34	LPI-MW-08	LPI-MW-20	LPI-MW-21
				Client sampling date / time	03-Jun-2018 00:00	03-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00	09-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-011	ES1817464-012	ES1817464-013	ES1817464-014	ES1817464-015
					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	**0.017**	<0.001	**0.007**
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 PFAS	----	0.0003	µg/L		**0.0111**	**0.0324**	**4.76**	**0.0813**	**1.54**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0105**	**0.0255**	**3.50**	**0.0650**	**1.14**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0111**	**0.0311**	**4.41**	**0.0788**	**1.45**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**67.0**	**64.5**	**61.0**	**77.8**	**76.2**
13C8-PFOA	----	0.0005	%		**109**	**87.5**	**68.1**	**103**	**78.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	LPI-MW-22	RMW-MW-01	RMW-MW-02	RMW-MW-04	RMW-MW-05
				Client sampling date / time	09-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-016	ES1817464-017	ES1817464-018	ES1817464-019	ES1817464-020
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0009**	**0.0072**	**0.0006**	**0.0012**	**0.0008**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0006**	**0.0084**	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0091**	**0.126**	**0.0018**	**0.0024**	**0.0041**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0069**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0086**	**0.152**	**0.0014**	**0.0013**	**0.0024**
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	0.002	µg/L		<0.002	**0.016**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.131**	**0.0014**	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0006**	**0.143**	**0.0012**	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0743**	**0.0006**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0014**	**0.0157**	**0.0006**	<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)				Client sample ID	LPI-MW-22	RMW-MW-01	RMW-MW-02	RMW-MW-04	RMW-MW-05
				Client sampling date / time	09-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-016	ES1817464-017	ES1817464-018	ES1817464-019	ES1817464-020
					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	**0.074**	<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 PFAS	----	0.0003	µg/L		**0.0212**	**0.754**	**0.0076**	**0.0049**	**0.0073**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0177**	**0.278**	**0.0032**	**0.0037**	**0.0065**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0206**	**0.739**	**0.0076**	**0.0049**	**0.0073**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**62.6**	**66.2**	**70.1**	**67.0**	**60.9**
13C8-PFOA	----	0.0005	%		**100**	**109**	**73.3**	**90.7**	**73.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC111	QC112	QC114	QC115	AFD-MW-21
				Client sampling date / time	04-Jun-2018 00:00	05-Jun-2018 00:00	09-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-022	ES1817464-023	ES1817464-025	ES1817464-026	ES1817464-027
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0008**	**0.0421**	**0.0014**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0008**	**0.0603**	**0.0013**	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0028**	**0.0209**	**0.534**	**0.0214**	**0.0021**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	**0.0292**	**0.0010**	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0022**	**0.0308**	**0.970**	**0.0352**	**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	0.002	µg/L		<0.002	**0.006**	**0.009**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0132**	**0.0322**	**0.0014**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0139**	**0.118**	**0.0051**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0113**	**0.0572**	**0.0026**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0057**	**0.0665**	**0.0030**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0012**	**0.0026**	<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)				Client sample ID	QC111	QC112	QC114	QC115	AFD-MW-21
				Client sampling date / time	04-Jun-2018 00:00	05-Jun-2018 00:00	09-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-022	ES1817464-023	ES1817464-025	ES1817464-026	ES1817464-027
					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	**0.007**	<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 PFAS	----	0.0003	µg/L		**0.0050**	**0.105**	**1.93**	**0.0724**	**0.0033**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0050**	**0.0517**	**1.50**	**0.0566**	**0.0033**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0050**	**0.103**	**1.84**	**0.0701**	**0.0033**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**62.7**	**61.1**	**68.6**	**63.6**	**61.1**
13C8-PFOA	----	0.0005	%		**77.4**	**86.2**	**76.5**	**89.7**	**74.1**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	AFD-MW-22	AFD-MW-36	AHEQ-MW-01	AHEQ-MW-02	AHEQ-MW-03
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
					ES1817464-028	ES1817464-029	ES1817464-030	ES1817464-031	ES1817464-032
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0012**	**0.0061**	<0.0005	**0.0005**	**0.0023**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0007**	**0.0051**	<0.0005	<0.0005	**0.0022**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0048**	**0.0349**	**0.0028**	**0.0087**	**0.0257**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0007**	<0.0005	<0.0005	**0.0010**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0004**	**0.0115**	**0.0020**	**0.0078**	**0.0252**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0.002**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0022**	**0.0130**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0046**	**0.0009**	**0.0044**	**0.0211**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0010**	<0.0005	**0.0018**	**0.0068**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0015**	<0.0005	**0.0010**	**0.0030**
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)				Client sample ID	AFD-MW-22	AFD-MW-36	AHEQ-MW-01	AHEQ-MW-02	AHEQ-MW-03
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-028	ES1817464-029	ES1817464-030	ES1817464-031	ES1817464-032
					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	**0.005**	<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 PFAS	----	0.0003	µg/L		**0.0071**	**0.0664**	**0.0057**	**0.0314**	**0.102**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0052**	**0.0464**	**0.0048**	**0.0165**	**0.0509**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0064**	**0.0606**	**0.0057**	**0.0314**	**0.0991**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**61.0**	**60.0**	**66.1**	**72.2**	**60.5**
13C8-PFOA	----	0.0005	%		**71.8**	**79.5**	**87.9**	**96.9**	**95.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	AHEQ-MW-05	AHEQ-MW-06	ASB-MW-07	ASB-MW-08	ASB-MW-10
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	07-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-033	ES1817464-034	ES1817464-035	ES1817464-036	ES1817464-037
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0016**	**0.0042**	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0015**	**0.0039**	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0240**	**0.0464**	<0.0005	**0.0008**	**0.0012**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0009**	**0.0015**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0233**	**0.0312**	**0.0007**	**0.0009**	**0.0014**
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	0.002	µg/L		**0.010**	**0.004**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0610**	**0.0154**	<0.0005	<0.0005	**0.0014**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0504**	**0.0182**	<0.0005	<0.0005	**0.0009**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0272**	**0.0086**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0029**	**0.0022**	<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)				Client sample ID	AHEQ-MW-05	AHEQ-MW-06	ASB-MW-07	ASB-MW-08	ASB-MW-10
				Client sampling date / time	06-Jun-2018 00:00	06-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	07-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-033	ES1817464-034	ES1817464-035	ES1817464-036	ES1817464-037
					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 PFAS	----	0.0003	µg/L		**0.203**	**0.136**	**0.0007**	**0.0017**	**0.0049**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0473**	**0.0776**	**0.0007**	**0.0017**	**0.0026**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.200**	**0.130**	**0.0007**	**0.0017**	**0.0049**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**66.7**	**78.6**	**60.6**	**61.8**	**82.4**
13C8-PFOA	----	0.0005	%		**92.8**	**89.3**	**78.5**	**82.6**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	ASB-MW-16	ASB-MW-21	ASB-MW-23	BRP-MW-01	BRP-MW-02
				Client sampling date / time	07-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	03-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-038	ES1817464-039	ES1817464-040	ES1817464-041	ES1817464-042
					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	**0.0029**	**0.0017**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0017**	**0.0008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.0012**	**0.0011**	**0.0073**	**0.0044**
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	0.0003	µg/L		**0.0005**	**0.0013**	**0.0019**	**0.0057**	**0.0023**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0276**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0012**	**0.0143**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	<0.0005	<0.0005	<0.0005	**0.0031**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	<0.0005	<0.0005	**0.0011**	**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: WATER (Matrix: WATER)				Client sample ID	ASB-MW-16	ASB-MW-21	ASB-MW-23	BRP-MW-01	BRP-MW-02
				Client sampling date / time	07-Jun-2018 00:00	07-Jun-2018 00:00	08-Jun-2018 00:00	03-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-038	ES1817464-039	ES1817464-040	ES1817464-041	ES1817464-042
					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 PFAS	----	0.0003	µg/L		**0.0005**	**0.0025**	**0.0030**	**0.0199**	**0.0551**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0005**	**0.0025**	**0.0030**	**0.0130**	**0.0067**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0005**	**0.0025**	**0.0030**	**0.0182**	**0.0543**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**63.5**	**74.0**	**82.1**	**76.8**	**80.6**
13C8-PFOA	----	0.0005	%		**83.8**	**105**	**114**	**109**	**104**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	BRP-MW-03	ELN-MW-02	ELN-MW-04	ELN-MW-07	ELN-MW-06
				Client sampling date / time	03-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00
					ES1817464-043	ES1817464-044	ES1817464-045	ES1817464-046	ES1817464-047
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0006**	**0.0010**	<0.0005	**0.0019**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0010**	<0.0005	**0.0020**	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0018**	**0.0203**	<0.0005	**0.0378**	**0.0005**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0006**	<0.0005	**0.0014**	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0010**	**0.0459**	<0.0003	**0.0748**	**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	0.002	µg/L		<0.002	**0.006**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0015**	**0.0170**	<0.0005	**0.0088**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0009**	**0.0141**	<0.0005	**0.0079**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0103**	<0.0005	**0.0057**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0068**	<0.0005	**0.0045**	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0020**	<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)				Client sample ID	BRP-MW-03	ELN-MW-02	ELN-MW-04	ELN-MW-07	ELN-MW-06
				Client sampling date / time	03-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00	04-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-043	ES1817464-044	ES1817464-045	ES1817464-046	ES1817464-047
					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 PFAS	----	0.0003	µg/L		**0.0058**	**0.125**	<0.0003	**0.145**	**0.0009**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0028**	**0.0662**	<0.0003	**0.113**	**0.0009**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0058**	**0.121**	<0.0003	**0.141**	**0.0009**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**67.7**	**78.9**	**76.3**	**83.6**	**77.5**
13C8-PFOA	----	0.0005	%		**109**	**102**	**109**	**109**	**113**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	ELN-MW-30	ELS-RW-1	ELS-MW-18	ELS-MW-19	ELS-MW-24
				Client sampling date / time	04-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
					ES1817464-048	ES1817464-049	ES1817464-050	ES1817464-051	ES1817464-052
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	**0.0061**	**0.0080**	**0.0055**	**0.0064**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	**0.0094**	**0.0121**	**0.0045**	**0.0047**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	**0.113**	**0.257**	**0.0766**	**0.0584**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	**0.0049**	**0.0092**	**0.0034**	**0.0024**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		<0.0003	**0.234**	**0.453**	**0.156**	**0.0712**
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	0.002	µg/L		<0.002	**0.009**	**0.014**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	**0.0430**	**0.0413**	**0.0153**	**0.0034**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	**0.0458**	**0.0494**	**0.0194**	**0.0053**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	**0.0164**	**0.0201**	**0.0083**	**0.0032**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	**0.0122**	**0.0178**	**0.0078**	**0.0035**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0013**	**0.0017**	**0.0006**	<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)				Client sample ID	ELN-MW-30	ELS-RW-1	ELS-MW-18	ELS-MW-19	ELS-MW-24
				Client sampling date / time	04-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-048	ES1817464-049	ES1817464-050	ES1817464-051	ES1817464-052
					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 PFAS	----	0.0003	µg/L		<0.0003	**0.495**	**0.884**	**0.297**	**0.158**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	**0.347**	**0.710**	**0.233**	**0.130**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	**0.480**	**0.861**	**0.289**	**0.151**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**64.2**	**78.9**	**78.5**	**71.4**	**80.5**
13C8-PFOA	----	0.0005	%		**78.2**	**111**	**109**	**107**	**113**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	ELS-MW-23	ELS-MW-20	RWW-MW-03	QC410	QC411
				Client sampling date / time	02-Jun-2018 00:00	02-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00	03-Jun-2018 00:00
					ES1817464-053	ES1817464-054	ES1817464-055	ES1817464-057	ES1817464-058
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0024**	**0.0110**	**0.0010**	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0023**	**0.0131**	**0.0006**	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0284**	**0.120**	**0.0044**	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0011**	**0.0066**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0467**	**0.266**	**0.0021**	<0.0003	<0.0003
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	0.002	µg/L		<0.002	**0.009**	**0.005**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		**0.0006**	**0.0223**	**0.0328**	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		**0.0011**	**0.0334**	**0.0148**	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		**0.0010**	**0.0116**	**0.0034**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0015**	**0.0107**	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	**0.0010**	<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)				Client sample ID	ELS-MW-23	ELS-MW-20	RWW-MW-03	QC410	QC411
				Client sampling date / time	02-Jun-2018 00:00	02-Jun-2018 00:00	05-Jun-2018 00:00	02-Jun-2018 00:00	03-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		ES1817464-053	ES1817464-054	ES1817464-055	ES1817464-057	ES1817464-058
					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 PFAS	----	0.0003	µg/L		**0.0851**	**0.505**	**0.0641**	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0751**	**0.386**	**0.0065**	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0817**	**0.484**	**0.0635**	<0.0003	<0.0003
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**83.5**	**78.1**	**83.4**	**76.3**	**73.4**
13C8-PFOA	----	0.0005	%		**116**	**109**	**108**	**102**	**101**

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	QC310	QC313	QC314	QC315	QC319
				Client sampling date / time	02-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	09-Jun-2018 00:00
					ES1817464-059	ES1817464-062	ES1817464-063	ES1817464-064	ES1817464-068
					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	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
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	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	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
Perfluoroheptanoic acid (PFHpA)	375-85-9	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	Client sample ID	QC310	QC313	QC314	QC315	QC319
				Client sampling date / time	02-Jun-2018 00:00	05-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	09-Jun-2018 00:00
					ES1817464-059	ES1817464-062	ES1817464-063	ES1817464-064	ES1817464-068
					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 PFAS	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
Sum of PFAS (WA DER List)	----	0.0003	µg/L		<0.0003	<0.0003	<0.0003	<0.0003	**0.0005**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**81.0**	**89.5**	**80.7**	**90.2**	**86.5**
13C8-PFOA	----	0.0005	%		**101**	**101**	**98.6**	**101**	**96.2**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC110	----	----	----	----
				Client sampling date / time	09-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1817464-069	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		**0.0011**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		**0.0010**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0136**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		**0.0007**	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0359**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L		<0.002	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		**0.0009**	----	----	----	----
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)				Client sample ID	QC110	----	----	----	----
				Client sampling date / time	09-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1817464-069	--------	--------	--------	--------
					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 PFAS	----	0.0003	µg/L		**0.0532**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0495**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0515**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**72.8**	----	----	----	----
13C8-PFOA	----	0.0005	%		**100**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1810434**	Page	: 1 of 21
Client	: **GOLDER ABBOCIATEB**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 14-Jun-2018
Order number	: 18100235	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 22-Jun-2018
Sampler	: ----		
Site	: PROJECT SAM		
Quote number	: BN/112/18		
No. of samples received	: 67		
No. of samples analysed	: 61		

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. 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*
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0049	0.0046	7.13	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0008	0.0008	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0007	0.0006	14.9	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0102	0.0095	7.72	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0056	0.0055	0.00	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0006	0.0006	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0049	0.0038	25.0	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10224259									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10224259) continued									
ES1817464-018	RMW-MW-02	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0014	0.0013	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0018	0.0021	16.2	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0020	0.0019	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0028	0.0022	23.8	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10236259									
ES1817464-039	ASB-MW-21	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0013	0.0013	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0012	0.0011	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.234	0.281	18.2	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0061	0.0079	25.4	0% - 50%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10236279) continued									
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0094	0.0104	10.3	0% - 20%
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.113	0.122	7.83	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0049	0.0067	30.5	0% - 50%
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21A: Perfluoroalkyl Bulfonic Acids (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0044	0.0040	9.07	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.0005	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0016	0.0016	0.00	No Limit
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224S69) continued									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0014	0.0013	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0012	0.0013	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0006	0.0007	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0009	0.0010	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10224259) continued									
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 102362S9									
ES1817464-039	ASB-MW-21	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0430	0.0445	3.38	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0458	0.0476	3.90	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0164	0.0192	15.6	0% - 20%
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0122	0.0140	13.9	0% - 20%
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	0.0013	0.0018	28.6	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	0.009	0.013	39.8	No Limit
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21- : Perfluoroalkyl Carboxylic Acids (QC Lot: 10236279) continued									
EP1807150-017	Anonymous	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0015	0.0017	11.0	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0024	0.0024	0.00	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0009	0.0010	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0016	0.0016	0.00	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10224S69) continued									
ES1817464-011	LDP-MW-13	EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 102362S9									
ES1817464-039	ASB-MW-21	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 1023625) continued									
ES1817464-039	ASB-MW-21	EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21C: Perfluoroalkyl Bulfonamides (QC Lot: 10236279) continued									
ES1817387-008	Anonymous	EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-011	LDP-MW-13	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-030	AHEQ-MW-01	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10224259) continued									
ES1817464-030	AHEQ-MW-01	EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10236259									
ES1817464-039	ASB-MW-21	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	0.002	0.002	0.00	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.00	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.00	No Limit
EPS21P: PFAB Bums (QC Lot: 10224S69									
ES1817464-001	EWHEQ-MW-01	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0171	0.0155	9.82	0% - 20%
ES1817464-011	LDP-MW-13	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0111	0.0099	11.4	0% - 20%
EPS21P: PFAB Bums (QC Lot: 10224259									
ES1817464-018	RMW-MW-02	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0076	0.0081	6.37	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EPS21P: PFAB Bums (QC Lot: 10224259) continued									
ES1817464-030	AHEQ-MW-01	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0057	0.0051	11.1	0% - 50%
EPS21P: PFAB Bums (QC Lot: 102362S9									
ES1817464-039	ASB-MW-21	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0025	0.0024	4.08	No Limit
ES1817464-049	ELS-RW-1	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.495	0.568	13.7	0% - 20%
EPS21P: PFAB Bums (QC Lot: 10236279									
EP1807150-017	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
ES1817387-008	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0144	0.0148	2.74	0% - 20%

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224S69								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	78.0	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	75.8	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	69.8	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	86.2	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	74.4	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	80.6	50	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224259								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	82.8	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	95.4	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	82.8	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	96.6	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	85.6	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	89.8	50	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 102362S9								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	111	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	110	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	105	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	102	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	88.2	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	56.0	50	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10236279								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	112	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	117	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	109	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	110	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	102	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	56.8	50	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224S69								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	55.0	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	78.4	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	85.2	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	75.2	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	87.2	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	74.2	50	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224S69) continued								
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	56.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	40.8	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	49.8	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	42.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	40.5	40	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224259								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	54.4	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	80.0	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	94.6	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	76.2	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	96.6	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	83.2	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	73.4	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	46.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	40.4	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	43.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	52.6	40	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236259								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	58.2	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	112	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	118	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	118	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	114	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	104	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	74.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	58.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	56.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	53.2	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	77.4	40	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236279								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	63.0	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	117	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	125	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	119	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	120	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	103	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	80.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	73.2	40	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236279) continued								
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	60.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	57.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	80.5	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224S69								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	75.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	43.1	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	40.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	52.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	44.9	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	60.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	40.8	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224259								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	69.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	66.5	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	44.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	56.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	86.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	73.6	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	57.4	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10236259								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	72.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	80.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	72.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	81.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	74.6	40	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 102362S9) continued								
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	53.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	50.8	40	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10236279								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	74.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	75.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	68.7	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	71.3	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	67.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	55.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	51.8	40	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224S69								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	81.0	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	89.2	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	82.8	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	69.6	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224259								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	88.4	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	96.0	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	111	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	89.0	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 102362S9								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	119	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	126	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	103	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	54.2	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10236279								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	118	50	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.01 µg/L	124	50	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	111	50	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.01 µg/L	62.4	50	130
EPS21P: PFAB Bums (QCLot: 10224S69								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21P: PFAB Bums (QCLot: 10224S69) continued								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EPS21P: PFAB Bums (QCLot: 10224259								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EPS21P: PFAB Bums (QCLot: 102362S9								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EPS21P: PFAB Bums (QCLot: 10236279								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	66.6	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	57.2	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	56.2	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	72.6	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	51.0	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	52.2	30	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	68.6	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	71.2	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	94.2	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	71.0	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	56.6	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	66.4	30	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 102362S9							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	98.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	93.8	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	85.6	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	98.2	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	86.2	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	48.6	30	130
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10236279							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EPS21A: Perfluoroalkyl Bulfonic Acids (QCLot: 10236279) continued							
ES1817387-001	Anonymous	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	92.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	108	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	85.0	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	92.4	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	80.6	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	46.8	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	# 16.0	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	64.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	70.0	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	84.6	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	83.0	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	61.8	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	63.2	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	75.4	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	33.4	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	32.6	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	36.3	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	45.0	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	68.4	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	85.0	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	94.0	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	82.0	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	66.6	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	54.6	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	71.0	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	44.8	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	46.8	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	48.6	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 102362S9							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	47.5	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	94.4	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	106	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	100	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	112	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	98.2	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	72.6	50	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 102362S9) continued							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	53.6	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	53.6	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	45.2	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	60.2	30	130
EPS21- : Perfluoroalkyl Carboxylic Acids (QCLot: 10236279							
ES1817387-001	Anonymous	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	46.6	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	81.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	123	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	103	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	105	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	92.8	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	66.8	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	61.2	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	59.0	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	46.0	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	57.4	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	59.4	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	41.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	45.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	54.3	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	68.1	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	52.0	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	62.4	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	59.0	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	75.0	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	63.0	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	60.8	30	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10224259) continued							
ES1817464-019	RMW-MW-04	EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	61.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	85.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	99.0	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 102362S9							
ES1817464-040	ASB-MW-23	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	72.6	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	69.9	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	61.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	64.5	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	66.5	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	49.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	47.0	30	130
EPS21C: Perfluoroalkyl Bulfonamides (QCLot: 10236279							
ES1817387-001	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	62.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	53.7	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	48.7	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	53.5	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	53.4	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	47.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	40.0	30	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224S69							
ES1817464-002	EWHEQ-MW-02	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	78.4	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	56.8	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	107	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	59.0	50	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10224259							
ES1817464-019	RMW-MW-04	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	72.8	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	116	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	115	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	79.2	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10236259							
ES1817464-040	ASB-MW-23	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	112	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	118	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	108	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	63.6	50	130
EPS21D: (n:S9Fluorotelomer Bulfonic Acids (QCLot: 10236279							
ES1817387-001	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	116	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	120	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	111	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	52.0	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1817464**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Telephone	: +61-2-8784 8555
Project	: 18100235	Date Samples Received	: 14-Jun-2018
Site	: PROJECT SAM	Issue Date	: 22-Jun-2018
Sampler	: ----	No. of samples received	: 67
Order number	: 18100235	No. of samples analysed	: 61

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231B: Perfluoroalkyl Carboxylic Acids	ES1817464--002	EWHEQ-MW-02	**Perfluorobutanoic acid (PFBA)**	375-22-4	16.0 %	30-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
Clear Plastic Bottle - Natural (EP231X-ST)							
ASB-MW-23	**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-05	**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELS-RW-1, ELS-MW-18, ELS-MW-19, ELS-MW-24, ELS-MW-23, ELS-MW-20, QC410, QC310	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
LDP-MW-10, LDP-MW-13, LDP-MW-34	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
BRP-MW-01, BRP-MW-02, BRP-MW-03, QC411	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC111	**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELN-MW-02, ELN-MW-04, ELN-MW-07, ELN-MW-06, ELN-MW-30	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
HOS-SA/254, HOS-SA/2, HOS-SA/4, HOS-SA/249, RMW-MW-01	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST)								
RMW-MW-04,	QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RWW-MW-03,	QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
EWHEQ-MW-01,	EWHEQ-MW-02,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
EWHEQ-MW-03,	EWHEQ-MW-04,							
EWHEQ-MW-05								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-02,	QC115,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
AFD-MW-21,	AFD-MW-22,							
AFD-MW-36,	AHEQ-MW-01,							
AHEQ-MW-02,	AHEQ-MW-03,							
AHEQ-MW-05,	AHEQ-MW-06							
HDPE (no PTFE) (EP231X-ST)								
QC314,	QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-07,	ASB-MW-10,	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
ASB-MW-16								
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-21		**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-08		**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
LPI-MW-08,	LPI-MW-20,	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
LPI-MW-21,	LPI-MW-22							
HDPE (no PTFE) (EP231X-ST)								
QC114		**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
QC319,	QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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							
Clear Plastic Bottle - Natural (EP231X-ST)							
ASB-MW-23	**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-05	**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELS-RW-1, ELS-MW-18, ELS-MW-19, ELS-MW-24, ELS-MW-23, ELS-MW-20, QC410, QC310	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
LDP-MW-10, LDP-MW-13, LDP-MW-34	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
BRP-MW-01, BRP-MW-02, BRP-MW-03, QC411	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC111	**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELN-MW-02, ELN-MW-04, ELN-MW-07, ELN-MW-06, ELN-MW-30	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
HOS-SA/254, HOS-SA/2, HOS-SA/4, HOS-SA/249, RMW-MW-01	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-04, QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RWW-MW-03, QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
EWHEQ-MW-01, EWHEQ-MW-02, EWHEQ-MW-03, EWHEQ-MW-04, EWHEQ-MW-05	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-02, QC115, AFD-MW-21, AFD-MW-22, AFD-MW-36, AHEQ-MW-01, AHEQ-MW-02, AHEQ-MW-03, AHEQ-MW-05, AHEQ-MW-06	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC314, QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ASB-MW-07, ASB-MW-10, ASB-MW-16	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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							
Clear Plastic Bottle - Natural (EP231X-ST)							
ASB-MW-23	**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-05	**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELS-RW-1, ELS-MW-18, ELS-MW-19, ELS-MW-24, ELS-MW-23, ELS-MW-20, QC410, QC310	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
LDP-MW-10, LDP-MW-13, LDP-MW-34	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
BRP-MW-01, BRP-MW-02, BRP-MW-03, QC411	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC111	**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ELN-MW-02, ELN-MW-04, ELN-MW-07, ELN-MW-06, ELN-MW-30	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
HOS-SA/254, HOS-SA/2, HOS-SA/4, HOS-SA/249, RMW-MW-01	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-04, QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RWW-MW-03, QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
EWHEQ-MW-01, EWHEQ-MW-02, EWHEQ-MW-03, EWHEQ-MW-04, EWHEQ-MW-05	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
RMW-MW-02, QC115, AFD-MW-21, AFD-MW-22, AFD-MW-36, AHEQ-MW-01, AHEQ-MW-02, AHEQ-MW-03, AHEQ-MW-05, AHEQ-MW-06	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
QC314, QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)							
ASB-MW-07, ASB-MW-10, ASB-MW-16	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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								
Clear Plastic Bottle - Natural (EP231X-ST)								
ASB-MW-23		**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-05		**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELS-RW-1,	ELS-MW-18,	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
ELS-MW-19,	ELS-MW-24,							
ELS-MW-23,	ELS-MW-20,							
QC410,	QC310							
HDPE (no PTFE) (EP231X-ST)								
LDP-MW-10,	LDP-MW-13,	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
LDP-MW-34								
HDPE (no PTFE) (EP231X-ST)								
BRP-MW-01,	BRP-MW-02,	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
BRP-MW-03,	QC411							
HDPE (no PTFE) (EP231X-ST)								
QC111		**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELN-MW-02,	ELN-MW-04,	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
ELN-MW-07,	ELN-MW-06,							
ELN-MW-30								
HDPE (no PTFE) (EP231X-ST)								
HOS-SA/254,	HOS-SA/2,	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HOS-SA/4,	HOS-SA/249,							
RMW-MW-01								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-04,	QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RWW-MW-03,	QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
EWHEQ-MW-01,	EWHEQ-MW-02,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
EWHEQ-MW-03,	EWHEQ-MW-04,							
EWHEQ-MW-05								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-02,	QC115,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
AFD-MW-21,	AFD-MW-22,							
AFD-MW-36,	AHEQ-MW-01,							
AHEQ-MW-02,	AHEQ-MW-03,							
AHEQ-MW-05,	AHEQ-MW-06							
HDPE (no PTFE) (EP231X-ST)								
QC314,	QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-07,	ASB-MW-10,	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
ASB-MW-16								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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								
Clear Plastic Bottle - Natural (EP231X-ST)								
ASB-MW-23		**08-Jun-2018**	**20-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-05		**02-Jun-2018**	**19-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELS-RW-1,	ELS-MW-18,	**02-Jun-2018**	**20-Jun-2018**	29-Nov-2018	✓	**20-Jun-2018**	29-Nov-2018	✓
ELS-MW-19,	ELS-MW-24,							
ELS-MW-23,	ELS-MW-20,							
QC410,	QC310							
HDPE (no PTFE) (EP231X-ST)								
LDP-MW-10,	LDP-MW-13,	**03-Jun-2018**	**19-Jun-2018**	30-Nov-2018	✓	**19-Jun-2018**	30-Nov-2018	✓
LDP-MW-34								
HDPE (no PTFE) (EP231X-ST)								
BRP-MW-01,	BRP-MW-02,	**03-Jun-2018**	**20-Jun-2018**	30-Nov-2018	✓	**20-Jun-2018**	30-Nov-2018	✓
BRP-MW-03,	QC411							
HDPE (no PTFE) (EP231X-ST)								
QC111		**04-Jun-2018**	**19-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ELN-MW-02,	ELN-MW-04,	**04-Jun-2018**	**20-Jun-2018**	01-Dec-2018	✓	**20-Jun-2018**	01-Dec-2018	✓
ELN-MW-07,	ELN-MW-06,							
ELN-MW-30								
HDPE (no PTFE) (EP231X-ST)								
HOS-SA/254,	HOS-SA/2,	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**19-Jun-2018**	02-Dec-2018	✓
HOS-SA/4,	HOS-SA/249,							
RMW-MW-01								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-04,	QC112	**05-Jun-2018**	**19-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
RWW-MW-03,	QC313	**05-Jun-2018**	**20-Jun-2018**	02-Dec-2018	✓	**20-Jun-2018**	02-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
EWHEQ-MW-01,	EWHEQ-MW-02,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**19-Jun-2018**	03-Dec-2018	✓
EWHEQ-MW-03,	EWHEQ-MW-04,							
EWHEQ-MW-05								
HDPE (no PTFE) (EP231X-ST)								
RMW-MW-02,	QC115,	**06-Jun-2018**	**19-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
AFD-MW-21,	AFD-MW-22,							
AFD-MW-36,	AHEQ-MW-01,							
AHEQ-MW-02,	AHEQ-MW-03,							
AHEQ-MW-05,	AHEQ-MW-06							
HDPE (no PTFE) (EP231X-ST)								
QC314,	QC315	**06-Jun-2018**	**20-Jun-2018**	03-Dec-2018	✓	**20-Jun-2018**	03-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST)								
ASB-MW-07,	ASB-MW-10,	**07-Jun-2018**	**19-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
ASB-MW-16								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-ST) ASB-MW-21	**07-Jun-2018**	**20-Jun-2018**	04-Dec-2018	✓	**20-Jun-2018**	04-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) ASB-MW-08	**08-Jun-2018**	**19-Jun-2018**	05-Dec-2018	✓	**20-Jun-2018**	05-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) LPI-MW-08, LPI-MW-20, LPI-MW-21, LPI-MW-22	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**19-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC114	**09-Jun-2018**	**19-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓
HDPE (no PTFE) (EP231X-ST) QC319, QC110	**09-Jun-2018**	**20-Jun-2018**	06-Dec-2018	✓	**20-Jun-2018**	06-Dec-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	8	75	**10.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	4	75	**5.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	4	75	**5.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	4	75	**5.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction and LC-Electrospray-MS-MS, Negative Mode using MRM. This method is targetted to pristine environmental and drinking waters reportin at sub-parts per trillion. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1817464**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR GREG WHITMORE	Contact	: Carsten Emrich
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: gwhitmore@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 18100235	Page	: 1 of 4
Order number	: 18100235	Quote number	: EB2018GOLASS0004 (BN/112/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PROJECT SAM		
Sampler	:		

Dates

Date Samples Received	: 14-Jun-2018 12:06	Issue Date	: 19-Jun-2018
Client Requested Due Date	: 21-Jun-2018	Scheduled Reporting Date	: **21-Jun-2018**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 3	Temperature	: 5'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 67 / 61

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC214, QC215 and QC113 have been forwarded to Eurofins.**
- **QC210 (formerly QC110) was sent to Eurofins for analysis.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.

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	*Client sampling date / time*	*Client sample ID*	(On Hold) WATER No analysis requested	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
ES1817464-001	06-Jun-2018 00:00	EWHEQ-MW-01		✓
ES1817464-002	06-Jun-2018 00:00	EWHEQ-MW-02		✓
ES1817464-003	06-Jun-2018 00:00	EWHEQ-MW-03		✓
ES1817464-004	06-Jun-2018 00:00	EWHEQ-MW-04		✓
ES1817464-005	06-Jun-2018 00:00	EWHEQ-MW-05		✓
ES1817464-006	05-Jun-2018 00:00	HOS-SA/254		✓
ES1817464-007	05-Jun-2018 00:00	HOS-SA/2		✓
ES1817464-008	05-Jun-2018 00:00	HOS-SA/4		✓
ES1817464-009	05-Jun-2018 00:00	HOS-SA/249		✓
ES1817464-010	03-Jun-2018 00:00	LDP-MW-10		✓
ES1817464-011	03-Jun-2018 00:00	LDP-MW-13		✓
ES1817464-012	03-Jun-2018 00:00	LDP-MW-34		✓
ES1817464-013	09-Jun-2018 00:00	LPI-MW-08		✓
ES1817464-014	09-Jun-2018 00:00	LPI-MW-20		✓
ES1817464-015	09-Jun-2018 00:00	LPI-MW-21		✓
ES1817464-016	09-Jun-2018 00:00	LPI-MW-22		✓
ES1817464-017	05-Jun-2018 00:00	RMW-MW-01		✓
ES1817464-018	06-Jun-2018 00:00	RMW-MW-02		✓
ES1817464-019	05-Jun-2018 00:00	RMW-MW-04		✓
ES1817464-020	02-Jun-2018 00:00	RMW-MW-05		✓
ES1817464-022	04-Jun-2018 00:00	QC111		✓
ES1817464-023	05-Jun-2018 00:00	QC112		✓
ES1817464-025	09-Jun-2018 00:00	QC114		✓
ES1817464-026	06-Jun-2018 00:00	QC115		✓
ES1817464-027	06-Jun-2018 00:00	AFD-MW-21		✓
ES1817464-028	06-Jun-2018 00:00	AFD-MW-22		✓
ES1817464-029	06-Jun-2018 00:00	AFD-MW-36		✓
ES1817464-030	06-Jun-2018 00:00	AHEQ-MW-01		✓
ES1817464-031	06-Jun-2018 00:00	AHEQ-MW-02		✓
ES1817464-032	06-Jun-2018 00:00	AHEQ-MW-03		✓
ES1817464-033	06-Jun-2018 00:00	AHEQ-MW-05		✓
ES1817464-034	06-Jun-2018 00:00	AHEQ-MW-06		✓
ES1817464-035	07-Jun-2018 00:00	ASB-MW-07		✓
ES1817464-036	08-Jun-2018 00:00	ASB-MW-08		✓
ES1817464-037	07-Jun-2018 00:00	ASB-MW-10		✓

			(On Hold) WATER No analysis requested	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
ES1817464-038	07-Jun-2018 00:00	ASB-MW-16		✓
ES1817464-039	07-Jun-2018 00:00	ASB-MW-21		✓
ES1817464-040	08-Jun-2018 00:00	ASB-MW-23		✓
ES1817464-041	03-Jun-2018 00:00	BRP-MW-01		✓
ES1817464-042	03-Jun-2018 00:00	BRP-MW-02		✓
ES1817464-043	03-Jun-2018 00:00	BRP-MW-03		✓
ES1817464-044	04-Jun-2018 00:00	ELN-MW-02		✓
ES1817464-045	04-Jun-2018 00:00	ELN-MW-04		✓
ES1817464-046	04-Jun-2018 00:00	ELN-MW-07		✓
ES1817464-047	04-Jun-2018 00:00	ELN-MW-06		✓
ES1817464-048	04-Jun-2018 00:00	ELN-MW-30		✓
ES1817464-049	02-Jun-2018 00:00	ELS-RW-1		✓
ES1817464-050	02-Jun-2018 00:00	ELS-MW-18		✓
ES1817464-051	02-Jun-2018 00:00	ELS-MW-19		✓
ES1817464-052	02-Jun-2018 00:00	ELS-MW-24		✓
ES1817464-053	02-Jun-2018 00:00	ELS-MW-23		✓
ES1817464-054	02-Jun-2018 00:00	ELS-MW-20		✓
ES1817464-055	05-Jun-2018 00:00	RWW-MW-03		✓
ES1817464-056	08-Jun-2018 00:00	ASB-MW-22	✓	
ES1817464-057	02-Jun-2018 00:00	QC410		✓
ES1817464-058	03-Jun-2018 00:00	QC411		✓
ES1817464-059	02-Jun-2018 00:00	QC310		✓
ES1817464-060	03-Jun-2018 00:00	QC311	✓	
ES1817464-061	04-Jun-2018 00:00	QC312	✓	
ES1817464-062	05-Jun-2018 00:00	QC313		✓
ES1817464-063	06-Jun-2018 00:00	QC314		✓
ES1817464-064	06-Jun-2018 00:00	QC315		✓
ES1817464-065	07-Jun-2018 00:00	QC316	✓	
ES1817464-066	08-Jun-2018 00:00	QC317	✓	
ES1817464-067	08-Jun-2018 00:00	QC318	✓	
ES1817464-068	09-Jun-2018 00:00	QC319		✓
ES1817464-069	09-Jun-2018 00:00	QC110		✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

DARCY SIMPSON

- *AU Certificate of Analysis - NATA (COA)	Email	dasimpson@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	dasimpson@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	dasimpson@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	dasimpson@golder.com.au
- Chain of Custody (CoC) (COC)	Email	dasimpson@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	dasimpson@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	dasimpson@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	dasimpson@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

GREG WHITMORE

- *AU Certificate of Analysis - NATA (COA)	Email	gwhitmore@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gwhitmore@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gwhitmore@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gwhitmore@golder.com.au
- Chain of Custody (CoC) (COC)	Email	gwhitmore@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	gwhitmore@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	gwhitmore@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	gwhitmore@golder.com.au

Sheet 1 of 5

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

PO#	18100235	Phone:	Lab Name: ALS - Brisbane
Site/ID No.:	SAM	Site Location: KTA Weipa - various sites	Quote No.: EN/002/16V2
Sampled By:			Order No.: EN/112/18
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ■		Stafford QLD 4053 AUSTRALIA
	3days ☐ 5 Days ☐ Date Required By:		
Delivery Option	HARD ☐ FAX ☐ DISK ☐ EMAIL ■ BULLETIN BOARD ☐		
Report Format	PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■		

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Gene Whitmore
Lab Contact: Stacey Simpson
Phone: 07 40549200
Fax: 07 40549201
Reviewed:
Phone: 0412323826 Email:

Golder Associatess

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS – Super Trace Long Suite (28 Analytes) (ALS Method Code FP231X-ST)	Comments
1	EWHEQ- MW-01	-PS-	060618	6.6.18	W			X	
2	EWHEQ- MW-02	-PS-	↓	↓	↓			↓	
3	EWHEQ- MW-03	-PS-							
4	EWHEQ- MW-04	-PS-							
5	EWHEQ- MW-05	-PS-							
6	HOS- SA/254	-PS-	050618	5.6.18	W				
7	HOS- ~~MW-8~~ SA/2	-PS-	↓	↓	↓				
8	HOS- SA/4	-PS-							
9	HOS- SA/249	-PS-							
10	LPD- MW-10	-PS-	030618	3.6.18	W				
11	LPD- MW-13	-PS-	↓	↓	↓				
12	LPD- MW-34	-PS-							
13	LPI- MW-08	-PS-	090618	9.6.18	W				
14	LPI- MW-20	-PS-	↓	↓	↓				
15	LPI- MW-21	-PS-							
16	LPI- MW-22	-PS-							

Environmental Division
Sydney
Work Order Reference
ES1817464

Telephone : + 61-2-8784 8555

SAMPLE MATRIX – soil/Sediment/Fill/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(DC)/Grab(GR)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11.6.18	0930
RECEIVED BY		ALS	13/6/18	1315
RELEASED BY		ALS	14/6/18	1206
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal: (NM)
Condition/Temperature: Chilled / Frozen / Ambient
Cool Ice: SC

JB 13/6 (3-5)

RL3
SH7004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Project No:	18100235	Phase:		Lab Name:	ALS - Brisbane
Site ID No.:	SAM	Site Location:	RTA Weipa - various sites	Quote No.:	EN/002/16V2
Sampled By:				Order No.:	BN312/18
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ■ 24hrs ☐ 5 Days ☐ Date Required By:				Stafford QLD 4053 AUSTRALIA
Delivery Option:	HARD ☐ FAX ☐ DISK ☐ EMAIL ■ BULLETIN BOARD ☐				
Report Format:	PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■				

GOLDER ASSOCIATES PTY LTD
Phone: 07 40548200
Golder Associates
216 Draper St, Cairns, 4870
Fax: 07 40548201
Project Manager: Greg Wallance
Reviewed:
Job Contact: Davey Simpson
Phone: 0412322426 Email:

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS – Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-SD1)															Comments
17	RWW- MW-01	-PS-	050618	5.6.18	W			X															
19	RWW- MW-02	-PS-	060618	6.6.18	↓			↓															
20	RWW- MW-04	-PS-	050618	5.6.18	↓			↓															
21	RWW- MW-05	-PS-	↓	↓				X															
22	QC110	-PS-	020618	2.6.18				X															
23	QC111	-PS-	030618	3.6.18				X															
24	QC112	-PS-	040618	4.6.18				X															
25	QC113	-PS-	050618	5.6.18					HOLD														
26	QC114	-PS-	090618	9.6.18				X															
	QC115 ~~QC116~~	-PS-	090618	9.6.18				X															
	~~QC111~~	~~-PS-~~																					

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle suspected parameters on analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11.6.18	0930
RECEIVED BY		AL	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Sheet 3 of 5

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Phone:		Lab Name:	ALS - Brisbane
Site ID No.:	SAM	Site Location:	RTA Weipa - various sites	Quote No.:	EN/002/16V2
Sampled By:				Order No.:	BN/112/18
Turnaround Time:	24hrs ☐	48hrs ☐	Standard ■	Date Required By:	Stafford QLD 4053 AUSTRALIA
	36hrs ☐	5 Days ☐			
Delivery Options:	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format:	PDF ■	EXCEL ■		ESDAT ■	ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD
724 Draper St, Cairns, 4870
Project Manager: Greg Wehbeee
Job Contact: Davey Simpson
Phone: 07 40548200
Fax: 07 40548201
Reference:
Phone: 0412312826 Email:
dsimpson@golder.com.au, gwehbeee@golder.com.au, weipa@golder.com.au

Golder Associatess

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID		SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS - Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-ST)	Comments
27	AFD- MW-21	-PS-	060618	W			X	
	~~AFD- MW-35~~	~~-PS-~~	—	—				
28	AFD- MW-22	-PS-	060618	W				
29	AFD- MW-36	-PS-	"	"				
30	AHEQ- MW-01	-PS-	"	"				
31	AHEQ- MW-02	-PS-	"	"				
32	AHEQ- MW-03	-PS-	"	"				
	~~AHEQ- MW-04~~	~~-PS-~~	—	—				
33	AHEQ- MW-05	-PS-	060618	W				
34	AHEQ- MW-06	-PS-	"	"				
35	ASB- MW-7	-PS-	090618	W				
36	ASB- MW-8	-PS-	080618	W				
37	ASB- MW-10	-PS-	070618	W				
38	ASB- MW-16	-PS-	070618	W				
39	ASB- MW-21	-PS-	070618	W				
40	ASB- MW-23	-PS-	080618	W				

SAMPLE MATRIX – Soil/Sediment/Fill/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameter in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11-6-18	0930
RECEIVED BY		ALS	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal: (N/A)
Suitable Containers: SC
Cool Pack:

Chilled
Frozen
Ambient

ALS BATCH NUMBER

Bottles
Address

3-5

RTS
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

4/5

Project No:	18100235	PO No.:		Lab Name:	ALS - Brisbane
Site ID:	SAM	SM Location:	KTA Weipa - various sites	Quote No.:	EN082/16V2
Sampled By:				Order No.:	BN/112/18
Turnaround Time:	24hrs ☐	48hrs ☐	Standard ■	Report To:	Stafford QLD 4053 AUSTRALIA
	36hrs ☐	5 Days ☐	Date Required By:		
Results Format:	HARD ☐ FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐	
Report Format:	PDF ■	EXCEL ■	ESDAT ■	ENVIROSYS ■	

GOLDER ASSOCIATES PTY LTD
214 Draper St, Cairns, 4870
Project Manager: Greg Wilmore
Lab Contact: Penny Simpson
Phone: 07 40548200
Fax: 07 40548201
Retrieval:
Phone: 0412327826 Email:
dgrimmond@golder.com.au; greg-wilmore@golder.com.au; penny@golder.com.au

Golder Associates

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID		SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PFAS – Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-ST)	Comments
01	BRP- MW-01	-PS- 030618	3-6-18	W			X	
02	BRP- MW-02	-PS-	↓	↓	↓		↓	
03	BRP- MW-03	-PS-	↓	↓	↓		↓	
04	ELN- MW-02	-PS- 040618	4-6-18	W				
05	ELN- MW-04	-PS-	↓	↓	↓			
06	ELN- MW-~~05~~07	-PS-						
07	ELN- MW-06	-PS-						
08	ELN- MW-30	-PS-	↓	↓	↓			
09	ELS- RW-1	-PS- 020618	2-6-18	W				
10	ELS- MW-18	-PS-	↓	↓	↓			
11	ELS- MW-19	-PS-						
12	ELS- MW-24	-PS-						
13	ELS- MW-~~26~~ 23	-PS-						
14	ELS- MW-~~28~~ 20	-PS-	↓	↓	↓		↓	

SAMPLE MATRIX – Soil/Sediment/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(D)/Disturbed(DS)/Core(CE), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11-6-18	0930
RECEIVED BY		XCI	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

3-5

Sheet 5 of 5

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	PO No:		Lab:	ALS - Brisbane
Job/ID No:	SAM	Site Location:	KIA Weipa - various sites	Lab Ref No:	EN002/16V2
Sampled By:		Quote No:		Quote Ref:	BN/112/18
Turnaround Time	24hrs ☐ 36hrs ☐	48hrs ☐ 5 Days ☐	Standard ■ Date Required By:		Stafford QLD 4053 AUSTRALIA
Delivery Options	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■	EXCEL ■	ESDAT ■	ENVIROSYS ■	

GOLDER ASSOCIATES PTY LTD
210 Draper St, Cairns, 4870
Phone: 07 40548200
Fax: 07 40548201
Project Manager: Geer Whitmore
Reviewed:
Job Contact: Darcy Hayman
Phone: 0412 128 C6 Email: darcy.hayman@golder.com.au
geer.whitmore@golder.com.au
cairns@golder.com.au

Golder Associatess

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	ALS / PBAS – Super Trace Long Suite (28 Analytes) (ALS Method Code EP231X-ST)																					Comments
54	RWW-MW03	PS	050618	5·6·18	W			X			IN ERROR PLEASE TEST																
56	ASB-MW22	PS	080618	8·6·18	W			—	HOLD																		
57	QC 410	PS	020618	2·6·18	W			[illegible]																			
58	QC 411	PS	030618	3·6·18	W																						
59	QC 310		020618	2·6·18				—	HOLD																		
60	QC 311		030618	3·6·18				—	HOLD																		
61	QC 312		040618	4·6·18				—	HOLD																		
62	QC 313		050618	5·6·18				—	HOLD																		
63	QC 314		060618	6·6·18				—	HOLD																		
64	QC 315		060618	6·6·18				—	HOLD																		
65	QC 316		070618	7·6·18				—	HOLD																		
66	QC 317		080618	8·6·18				—	HOLD																		
67	QC 318		080618	8·6·18					HOLD																		
68	QC 319		090618	9·6·18				—	HOLD																		

SAMPLE MATRIX – Soil, Sediment, Fill, Water, Other

SAMPLE TYPE – Composite (C), Discrete (DC), Discarded (DS), Core (CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in sample list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11·6·18	0930
RECEIVED BY		ALS	14/6/18	1206
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal: NA

Condition / Temperature

Cool Box: SC

Labels

Bottles

Ambient

3-5

ALS SNT004 Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet 1 of 1

Project No:	18100335	Project:		Lab Name:	Eurofins
Site ID No.:	SAM	Site Location:	RTA Weipa - various sites	Quote No.:	
Sampled By:				Order No.:	
Turnaround Time	24hrs ☐		48hrs ☐	Standard ■	Stafford QLD 4053 AUSTRALIA
	36hrs ☐		3 Days ☐	Date Required By:	
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■		EXCEL ■	ESDAT ■	ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD
216 Bruce St, Cairns, 4870
Project Manager: Greg Whitmore
Job Contact: Barry Stenson
Phone: 07 40548200
Fax: 07 40548201
Reviewed:
Phone: 0437217820 Email:
Golder Associates
dstenson@golder.com.au
gwhitmore@golder.com.au
cairns@golder.com.au

Comments/Special Instructions: PLEASE FORWARD TO EUROFINS BRISBANE.

ANALYSIS REQUIRED

LAB ID	SAMPLE ID		SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	Perfluorooctanesulfonic acid (PFOS) Ultra Trace	Comments
	QC210	~~FS~~	020618	2·618	W	1	X	
	~~QC211~~	~~FS~~						
	~~QC212~~	~~FS~~						
	~~QC213~~	~~FS~~						
	QC214	FS	090618	9·6·18	W	1	X	
	QC215		090618	9·6·18	W	1	X	

13-6-18 COPY COC

SENT

SAMPLE MATRIX – Soil/Sediment/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(D)/Disturbed(DS)/Cute(CE), Grab Sample (GS)

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11·6·18	0930
RECEIVED BY		AES	14/6/18	1200
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

HIGH CONCENTRATION: circle expected parameter in analysis list

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal	N/A		Chilled		Bill to:
Suitable Containers			Frozen		Address:
Cool Box	SS		Ambient		

3-5

XL3
SW706d
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER'S; LABORATORY ON RECEIPT OF SAMPLES.

Fadi Soro

From: ALSEnviro Brisbane
Sent: Monday, 18 June 2018 4:54 PM
To: Samples Sydney
Cc: Andrew Epps
Subject: FW: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hello,

Can you please add analysis and updates as per below? Can you please confirm once this is complete and I will let the client know.

Regards

Caroline Hill
Client Services, Environmental
Brisbane

T +61 7 3243 7222 D +61 7 3552 8662
Caroline.Hill@ALSGlobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053 AUSTRALIA

Subscribe

Environmental Division
Sydney
Work Order Reference
ES1817464

Telephone : +61-2-8784 8555

We are keen for your feedback! Please click here for your 3 minute survey

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EnviroMail™ 121 – Best practice to prevent false positives and negatives for dissolved metals
EnviroMail™ 120 – Microtox Toxicity Test
EnviroMail™ 119 – ALS NATA Accreditation now extends to PFAS in Biota

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From: Cornish, Emma [mailto:ECornish@golder.com.au]
Sent: Monday, 18 June 2018 3:51 PM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Cc: Avril Stephens <Avril.Stephens@alsglobal.com>; Simpson, Darcy <DASimpson@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Can we also analyse the following samples analysed for EP231X-ST;

ES1817464-062	QC313
ES1817464-063	QC314
ES1817464-064	QC315
ES1817464-068	QC319

In addition on the lab certifications can we please change the site to Project Sam.

Please provide an updated SRN with changes request in this email and the email below.

Kind regards,
Emma

From: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Sent: Monday, 18 June 2018 2:18 PM
To: Cornish, Emma <ECornish@golder.com.au>
Cc: Avril Stephens <Avril.Stephens@alsglobal.com>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Emma,

ALS Sydney have the QC210 sample and will add the analysis as requested you should get an updated SRN shortly.

Regards,

John Pickering
Client Services, Environmental - Brisbane



T +61 7 3243 7222 D +61 7 3552 8634
john.pickering@alsglobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053
AUSTRALIA



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From: Cornish, Emma <ECornish@golder.com.au>
Sent: Monday, 18 June 2018 11:47 AM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Yes we have contacted Eurofins.

Can you please analyse QC210 which ALS has currently, as QC110 as per the COC. Send an updated SRN.

Kind regards,
Emma

From: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Sent: Monday, 18 June 2018 11:44 AM
To: Cornish, Emma <ECornish@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Emma,

Eurofins has sample QC210 you will need to contact them for analysis.

EQUAL ■ ENVIROSYS ■

PLEASE FORWARD TO EUROFINS BRISBANE.

SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No. CONTAINERS	Level of Contamination (Low/Med/Unknown)	Perfluorooctanesulfonic acid (PFOS) Ultra Trace
QC210	PS-	020618	2·6·18	W	1		X
~~QC211~~	~~PS-~~						
~~QC212~~	~~PS-~~						
~~QC213~~	~~PS-~~						
QC214	PS-	090618	9·6·18	W	1		X
QC215		090618	9·6·18	W	1		X

Regards,

John Pickering
Client Services, Environmental - Brisbane

T +61 7 3243 7222 D +61 7 3552 8634
john.pickering@alsglobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053
AUSTRALIA

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EnviroMail™ 120 – Microtox Toxicity Test
EnviroMail™ 119 – ALS NATA Accreditation now extends to PFAS in Biota
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From: Cornish, Emma <ECornish@golder.com.au>
Sent: Monday, 18 June 2018 10:59 AM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Subject: FW: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

HI,

Can you please help for the below.

Kind regards,
Emma

From: Cornish, Emma
Sent: Monday, 18 June 2018 10:57 AM
To: 'Andrew Epps' <Andrew.Epps@alsglobal.com>; Simpson, Darcy <DASimpson@golder.com.au>
Cc: Whitmore, Greg <GWhitmore@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Can you please analyse QC210 as QC110 as per the COC. Send an updated SRN.

We have confirmed that eurofins has QC110.

Kind regards,
Emma

From: Andrew Epps <Andrew.Epps@alsglobal.com>
Sent: Friday, 15 June 2018 4:06 PM
To: Simpson, Darcy <DASimpson@golder.com.au>
Cc: Cornish, Emma <ECornish@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Darcy,

As discussed, Sydney have received a QC210 sample and have not received a QC110 sample for this same WO (see attached COC). As per your instruction we'll hold off on analysing this one until we receive clarification from you on Monday.

Regards,

Andrew Epps
Client Services, Environmental
Brisbane

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Andrew.Epps@alsglobal.com
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Stafford QLD 4053

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EnviroMail™ 120 – Microtox Toxicity Test
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From: ALSEnviro Brisbane
Sent: Friday, 15 June 2018 3:45 PM
To: 'Cornish, Emma' <ECornish@golder.com.au>
Cc: Whitmore, Greg <GWhitmore@golder.com.au>
Subject: RE: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi Emma,

I have spoken to Sydney and they should be able to forward this one on for you.

Let me know if I can help with anything further.

Regards,

Andrew Epps
Client Services, Environmental
Brisbane

T +61 7 3243 7222 D +61 7 3552 8639
Andrew.Epps@alsglobal.com
2 Byth Street (cnr Shand & Byth Street)
Stafford QLD 4053

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EnviroMail™ 120 – Microtox Toxicity Test
EnviroMail™ 119 – ALS NATA Accreditation now extends to PFAS in Biota
Right Solutions • Right Partner
www.alsglobal.com

From: Cornish, Emma [mailto:ECornish@golder.com.au]
Sent: Friday, 15 June 2018 1:06 PM
To: ALSEnviro Brisbane <ALSEnviro.Brisbane@alsglobal.com>
Cc: Whitmore, Greg <GWhitmore@golder.com.au>
Subject: FW: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

Hi,

Can I get lab sample ES1817464-024 with field ID QC113 sent to Eurofins with the attached COC.

Kind regards,
Emma

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Friday, 15 June 2018 12:20 PM
To: Cornish, Emma <ECornish@golder.com.au>
Subject: CoC for ALS Workorder : ES1817464 | Your Reference: 18100235

ALS Environmental

Deliverables for ALS Workorder ES1817464

Project: 18100235

Dear EMMA CORNISH,

Please find enclosed the following deliverables for **ES1817464**:

- ES1817464_COC.pdf

Report Recipients

- GREG WHITMORE
  - ES1817464_COC.pdf (Email)
- DARCY SIMPSON
  - ES1817464_COC.pdf (Email)
- EMMA CORNISH
  - ES1817464_COC.pdf (Email)
- GREG WHITMORE
  - ES1817464_COC.pdf (Email)

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Emma Cornish**

Report **596501-W**
Project name PROJECT SAM
Project ID 18100235
Received Date May 01, 2018

Client Sample ID			**QC201_25-4-2018**	**QC202_25-4-2018**	**QC203_25-4-2018**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**B18-My02146**	**B18-My02147**	**B18-My02148**
Date Sampled			**Apr 25, 2018**	**Apr 25, 2018**	**Apr 25, 2018**
Test/Reference	LOR	Unit			
PFASs Summations					
Sum (PFHxS + PFOS)*	0.001	ug/L	0.002	0.005	0.011
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	0.002	0.003	0.005
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	0.002	0.005	0.011
Sum of WA DER PFAS (n=10)*	0.005	ug/L	< 0.005	0.005	0.011
Sum of PFASs (n=28)*	0.005	ug/L	< 0.005	0.005	0.013
Perfluoroalkyl carboxylic acids (PFCAs) - Trace					
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C4-PFBA (surr.)	1	%	69	71	65
13C5-PFPeA (surr.)	1	%	74	75	69
13C5-PFHxA (surr.)	1	%	86	86	82
13C4-PFHpA (surr.)	1	%	77	78	73
13C8-PFOA (surr.)	1	%	72	71	64
13C5-PFNA (surr.)	1	%	59	55	41
13C6-PFDA (surr.)	1	%	32	34	23
13C2-PFUnDA (surr.)	1	%	17	22	12
13C2-PFDoDA (surr.)	1	%	INT	11	INT
13C2-PFTeDA (surr.)	1	%	INT	INT	INT
Perfluoroalkyl sulfonic acids (PFSAs)- Trace					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	< 0.001	0.002
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	< 0.001	[N09]0.002	[N09]0.006
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.001	ug/L	0.002	[N09]0.003	[N09]0.005
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	93	96	93

Client Sample ID			QC201_25-4-2018	QC202_25-4-2018	QC203_25-4-2018
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**B18-My02146**	**B18-My02147**	**B18-My02148**
Date Sampled			**Apr 25, 2018**	**Apr 25, 2018**	**Apr 25, 2018**
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonic acids (PFSAs)- Trace					
18O2-PFHxS (surr.)	1	%	84	88	80
13C8-PFOS (surr.)	1	%	55	58	40
Perfluoroalkyl sulfonamido substances- Trace					
Perfluorooctane sulfonamide (FOSA)[N11]	0.002	ug/L	< 0.002	< 0.002	< 0.002
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.002	ug/L	< 0.002	< 0.002	< 0.002
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.002	ug/L	< 0.002	< 0.002	< 0.002
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.002	ug/L	< 0.002	< 0.002	< 0.002
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.002	ug/L	< 0.002	< 0.002	< 0.002
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.002	ug/L	< 0.002	< 0.002	< 0.002
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.002	ug/L	< 0.002	< 0.002	< 0.002
13C8-FOSA (surr.)	1	%	38	41	21
D3-N-MeFOSA (surr.)	1	%	11	INT	INT
D5-N-EtFOSA (surr.)	1	%	INT	INT	INT
D7-N-MeFOSE (surr.)	1	%	11	INT	INT
D9-N-EtFOSE (surr.)	1	%	INT	INT	INT
D5-N-EtFOSAA (surr.)	1	%	23	30	16
D3-N-MeFOSAA (surr.)	1	%	28	32	21
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
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 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
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C2-4:2 FTSA (surr.)	1	%	89	84	79
13C2-6:2 FTSA (surr.)	1	%	109	114	94
13C2-8:2 FTSA (surr.)	1	%	41	45	31

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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) - Trace			
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	Brisbane	May 02, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)- Trace	Brisbane	May 02, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances- Trace	Brisbane	May 02, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace	Brisbane	May 02, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
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Site # 1254 & 14271

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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	PO10250	**Received:**	May 1, 2018 10:30 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	596501	**Due:**	May 9, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Emma Cornish
Project Name:	PROJECT SAM				
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC201_25-4-2018	Apr 25, 2018		Water	B18-My02146	X
2	QC202_25-4-2018	Apr 25, 2018		Water	B18-My02147	X
3	QC203_25-4-2018	Apr 25, 2018		Water	B18-My02148	X
Test Counts						3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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) - 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	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.001			0.001	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotridecanoic acid (PFTrDA)	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	
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							
Perfluoroalkyl sulfonamido substances- Trace							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.002			0.002	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.002			0.002	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.002			0.002	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.002			0.002	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.002			0.002	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.002			0.002	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.002			0.002	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	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs) - Trace							
Perfluorobutanoic acid (PFBA)	%	102			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	114			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	100			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	99			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	101			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	101			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	102			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	104			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	113			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	62			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	133			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Trace							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorobutanesulfonic acid (PFBS)	%	96			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	131			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	87			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	99			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	100			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	133			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Trace							
Perfluorooctane sulfonamide (FOSA)	%	97			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	115			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	115			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	96			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	99			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	103			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	104			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	104			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	129			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1					
Perfluorobutanoic acid (PFBA)	S18-My08654	NCP	%	100			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S18-My08654	NCP	%	105			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S18-My08654	NCP	%	101			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S18-My08654	NCP	%	100			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S18-My08654	NCP	%	100			50-150	Pass	
Perfluorononanoic acid (PFNA)	S18-My08654	NCP	%	100			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S18-My08654	NCP	%	98			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S18-My08654	NCP	%	104			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S18-My08654	NCP	%	123			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S18-My08654	NCP	%	89			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S18-My08654	NCP	%	129			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)- Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S18-My08654	NCP	%	99			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S18-My08654	NCP	%	102			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S18-My08654	NCP	%	90			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S18-My08654	NCP	%	106			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S18-My08654	NCP	%	99			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S18-My08654	NCP	%	132			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	S18-My08654	NCP	%	98			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S18-My08654	NCP	%	106			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S18-My08654	NCP	%	125			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S18-My08654	NCP	%	103			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S18-My08654	NCP	%	109			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S18-My08654	NCP	%	105			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S18-My08654	NCP	%	97			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S18-My08654	NCP	%	113			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S18-My08654	NCP	%	93			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S18-My08654	NCP	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S18-My08654	NCP	%	82			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S18-My08644	NCP	ug/L	0.02	0.02	11	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S18-My08644	NCP	ug/L	0.06	0.06	6.0	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S18-My08644	NCP	ug/L	0.01	0.01	1.0	30%	Pass	
Perfluorooctanoic acid (PFOA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)- Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S18-My08644	NCP	ug/L	0.08	0.07	7.0	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S18-My08644	NCP	ug/L	0.08	0.07	5.0	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S18-My08644	NCP	ug/L	0.19	0.19	2.0	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances- Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S18-My08644	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S18-My08644	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations 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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Site # 1254 & 14271

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name: **Golder Associates Pty Ltd (Qld)**

Contact name: Emma Cornish
Project name: PROJECT SAM
Project ID: 18100235
COC number: COC #4
Turn around time: 5 Day
Date/Time received: May 1, 2018 10:30 AM
Eurofins | mgt reference: **596501**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 5.6 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Emma Cornish - ecornish@golder.com.au.

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NATA # 1261
Site # 1254 & 14271

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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	PO10250	**Received:**	May 1, 2018 10:30 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	596501	**Due:**	May 9, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Emma Cornish
Project Name:	PROJECT SAM				
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC201_25-4-2018	Apr 25, 2018		Water	B18-My02146	X
2	QC202_25-4-2018	Apr 25, 2018		Water	B18-My02147	X
3	QC203_25-4-2018	Apr 25, 2018		Water	B18-My02148	X
Test Counts						3

COC#4

1 OF

Sheet ___ of ___

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	**Phase:**	2000	**Lab Name:**	Eurofins - Brisbane
Site ID No.:		**Site Location:**	Project Sam	**Quote No.**	#160715Q
Sampled By:	Emma Cornish			**Order No.:**	PO10250
Turnaround Time	24hrs ☐ 36hrs ☐		48hrs ☐ 5 Days ☐	Standard ■ Date Required By:	Address: 1/21 Smallwood Place MURARRIE QLD 4172
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■		EXCEL ■	ESDAT ■	

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Greg Whitmore
Job Contact : Emma Cornish
Phone: 07 40548200
Fax: 07 40548201
Reviewed:
Phone: 0407134931 Email: ecornish@golder.com.au; gwhitmore@golder.com.au

GOLDER

ANALYSIS REQUIRED

Comments/Special Instructions: SECONDARY SAMPLES ALS please send to Eurofins Brisbane

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	28 PFAS including PFOA/PFOS and 6:2 FTS (Standard Limit of Reporting)	28 PFAS including PFOA/PFOS and 6:2 FTS (Trace Limit of Reporting)	Perfluorooctanesulfonic acid (PFOS) - Ultra Trace and remaining PFAS analytes	Comments
	QC201_25-4-2018		25/04/2018		Water	1	Unknown		x		
	QC202_25-4-2018		25/04/2018		Water	1	Unknown		x		
	QC203_25-4-2018		25/04/2018		Water	1	Unknown		x		

SAMPLE MATRIX – Soil/Sediment/Fill/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(D)/Disturbed(DS)/Core(CR) Grab Sample (GS)

HIGH CONCENTRATION: enter expected concentration in study area list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Cornish GRC	GOLDER	26/4/18	10:00
RECEIVED BY	J Smith	ALS	27/4/18	10:05
RELEASED BY				
RECEIVED BY				
RELEASED BY	J. BRADLEY	ALS	1/5/18	2.30
RECEIVED BY	D Clancy	Enkore	1/5/18	10:30

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref.
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Greg Whitmore**

Report **602941-W**
Project name PROJECT SAM
Project ID 18100235
Received Date Jun 14, 2018

Client Sample ID			**QC210**	**QC214**	**QC215**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**M18-Jn15139**	**M18-Jn15140**	**M18-Jn15141**
Date Sampled			**Jun 02, 2018**	**Jun 09, 2018**	**Jun 09, 2018**
Test/Reference	LOR	Unit			
PFASs Summations					
Sum (PFHxS + PFOS)*	0.001	ug/L	0.069	2.5	0.129
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	0.055	1.876	0.104
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	0.071	2.576	0.134
Sum of WA DER PFAS (n=10)*	0.005	ug/L	0.073	2.862	0.15
Sum of PFASs (n=28)*	0.005	ug/L	0.073	2.928	0.152
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace					
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005	0.015	< 0.005
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	0.001	[N09]0.052	0.004
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001	[N09]0.11	0.006
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001	[N09]0.055	0.003
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	0.002	[N09]0.076	0.005
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001	0.002	< 0.001
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C4-PFBA (surr.)	1	%	188	156	160
13C5-PFPeA (surr.)	1	%	163	134	142
13C5-PFHxA (surr.)	1	%	132	107	113
13C4-PFHpA (surr.)	1	%	143	111	120
13C8-PFOA (surr.)	1	%	161	115	131
13C5-PFNA (surr.)	1	%	150	145	127
13C6-PFDA (surr.)	1	%	96	67	71
13C2-PFUnDA (surr.)	1	%	72	67	52
13C2-PFDoDA (surr.)	1	%	57	49	66
13C2-PFTeDA (surr.)	1	%	78	54	48
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	0.001	[N09]0.048	0.003
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	[N09]0.037	0.002
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	[N09]0.016	[N09]0.70	[N09]0.030
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	[N09]0.027	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.0001	ug/L	[N09]0.053	[N09]1.8	[N09]0.099
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	118	101	103

Client Sample ID			QC210	QC214	QC215
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			M18-Jn15139	M18-Jn15140	M18-Jn15141
Date Sampled			Jun 02, 2018	Jun 09, 2018	Jun 09, 2018
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace					
18O2-PFHxS (surr.)	1	%	139	95	115
13C8-PFOS (surr.)	1	%	111	107	77
Perfluoroalkyl sulfonamido substances- Ultra Trace					
Perfluorooctane sulfonamide (FOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.005	ug/L	< 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
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
13C8-FOSA (surr.)	1	%	108	88	109
D3-N-MeFOSA (surr.)	1	%	92	66	111
D5-N-EtFOSA (surr.)	1	%	53	39	27
D7-N-MeFOSE (surr.)	1	%	86	64	85
D9-N-EtFOSE (surr.)	1	%	76	57	65
D5-N-EtFOSAA (surr.)	1	%	84	63	58
D3-N-MeFOSAA (surr.)	1	%	80	71	74
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
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005	0.006	< 0.005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C2-4:2 FTSA (surr.)	1	%	119	105	105
13C2-6:2 FTSA (surr.)	1	%	168	110	120
13C2-8:2 FTSA (surr.)	1	%	115	95	87

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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	Jun 18, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace	Brisbane	Jun 18, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances- Ultra Trace	Brisbane	Jun 18, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace	Brisbane	Jun 18, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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NATA # 1261
Site # 1254 & 14271

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NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jun 14, 2018 12:00 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	602941	**Due:**	Jun 21, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:	RTAM WEIPA				
Project ID:	SAM				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC210	Jun 02, 2018		Water	M18-Jn15139	X
2	QC214	Jun 09, 2018		Water	M18-Jn15140	X
3	QC215	Jun 09, 2018		Water	M18-Jn15141	X
Test Counts						3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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	< 0.005			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	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.001			0.001	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.001			0.001	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							
Perfluorobutanesulfonic acid (PFBS)	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	< 0.005			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							
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)	%	104			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	140			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	112			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	112			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	106			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	108			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	92			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	98			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	126			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	84			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	118			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorobutanesulfonic acid (PFBS)	%	132			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	78			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	126			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	82			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	106			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	76			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Ultra Trace							
Perfluorooctane sulfonamide (FOSA)	%	128			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	116			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	122			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	116			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	88			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	112			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	98			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	132			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	104			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	116			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	60			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)	M18-Jn14458	NCP	%	71			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M18-Jn14458	NCP	%	119			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M18-Jn14458	NCP	%	80			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M18-Jn14458	NCP	%	74			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M18-Jn14458	NCP	%	77			50-150	Pass	
Perfluorononanoic acid (PFNA)	M18-Jn14458	NCP	%	73			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M18-Jn14458	NCP	%	60			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M18-Jn14458	NCP	%	62			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M18-Jn14458	NCP	%	67			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M18-Jn14458	NCP	%	62			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M18-Jn14458	NCP	%	53			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M18-Jn14458	NCP	%	94			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M18-Jn14458	NCP	%	58			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M18-Jn14458	NCP	%	88			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M18-Jn14458	NCP	%	69			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M18-Jn14458	NCP	%	79			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M18-Jn14458	NCP	%	71			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	M18-Jn14458	NCP	%	96			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M18-Jn14458	NCP	%	74			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M18-Jn14458	NCP	%	54			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M18-Jn14458	NCP	%	75			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M18-Jn14458	NCP	%	58			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M18-Jn14458	NCP	%	56			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M18-Jn14458	NCP	%	72			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M18-Jn14458	NCP	%	96			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	M18-Jn14458	NCP	%	77			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M18-Jn14458	NCP	%	74			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M18-Jn14458	NCP	%	52			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)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	M18-Jn14459	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M18-Jn14459	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

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Site # 1254 & 14271

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Greg Whitmore
Project name:	RTAM WEIPA
Project ID:	SAM
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 14, 2018
Eurofins | mgt reference:	**602941**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 9.5 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

QC110 received instead of QC210. Sample logged as QC210 as per CoC

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Greg Whitmore - GWhitmore@golder.com.au.

eurofins | mgt

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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jun 14, 2018 12:00 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	602941	**Due:**	Jun 21, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:	RTAM WEIPA				
Project ID:	SAM				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC210	Jun 02, 2018		Water	M18-Jn15139	X
2	QC214	Jun 09, 2018		Water	M18-Jn15140	X
3	QC215	Jun 09, 2018		Water	M18-Jn15141	X
Test Counts						3

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet 1 of 1

Project No:	18100235	**Phase:**		**Lab Name:**	Eurofins
Site ID No.:	SAM	**Site Location:**	RTA Weipa - various sites	**Quote No.**	
Sampled By:				**Order No.:**	
Turnaround Time	24hrs ☐ 36hrs ☐	48hrs ☐ 5 Days ☐	Standard ☐ **Date Required By:**	Address: 2 Byth Street (cnr Shand & Byth Streets) Stafford QLD 4053 AUSTRALIA	
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ☐	BULLETIN BOARD ☐
Report Format	PDF ☐	EXCEL ☐	ESDAT ☐	ENVIROSYS ☐	

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Phone: 07 40548200
Fax: 07 40548201
Project Manager: Greg Whitmore
Reviewed:
Job Contact : Darcy Simpson
Phone: 0412322826 Email: dasimpson@golder.com.au, gregwhitmore@golder.com.au, ecornish@golder.com.au

Comments/Special Instructions: PLEASE FORWARD TO EUROFINS BRISBANE.

ANALYSIS REQUIRED

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	Perfluorooctanesulfonic acid (PFOS) - Ultra Trace														Comments
	QC210	-PS-	020618	2·6·18	W	1		X														
	~~QC211~~	~~-PS-~~																				
	~~QC212~~	~~-PS-~~																				
	~~QC213~~	~~-PS-~~																				
	QC214	-PS-	090618	9·6·18	W	1		X														
	QC215		090618	9·6·18	W	1		X														

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	11·6·18	0930
RECEIVED BY				
RELEASED BY	D. BRADLEY	ALS	14·6·18	7.30
RECEIVED BY	R. Turner	EUROFINS	14/6/18	12:40
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — **LAB. BATCH NUMBER**

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Darcy Simpson**

Report **603377-W**
Project name PROJECT SAM
Project ID 18100235
Received Date Jun 18, 2018

Client Sample ID			**QC113**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**S18-Jn18358**
Date Sampled			**Jun 05, 2018**
Test/Reference	LOR	Unit	
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 DER PFAS (n=10)*	0.005	ug/L	< 0.005
Sum of PFASs (n=28)*	0.005	ug/L	< 0.005
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace			
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	< 0.001
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	< 0.001
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001
13C4-PFBA (surr.)	1	%	111
13C5-PFPeA (surr.)	1	%	74
13C5-PFHxA (surr.)	1	%	121
13C4-PFHpA (surr.)	1	%	122
13C8-PFOA (surr.)	1	%	142
13C5-PFNA (surr.)	1	%	106
13C6-PFDA (surr.)	1	%	119
13C2-PFUnDA (surr.)	1	%	91
13C2-PFDoDA (surr.)	1	%	92
13C2-PFTeDA (surr.)	1	%	142
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace			
Perfluorobutanesulfonic acid (PFBS)[N11]	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	[N09]0.0006
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001
13C3-PFBS (surr.)	1	%	96

Client Sample ID			QC113
Sample Matrix			Water
Eurofins | mgt Sample No.			S18-Jn18358
Date Sampled			Jun 05, 2018
Test/Reference	LOR	Unit	
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace			
18O2-PFHxS (surr.)	1	%	104
13C8-PFOS (surr.)	1	%	93
Perfluoroalkyl sulfonamido substances- Ultra Trace			
Perfluorooctane sulfonamide (FOSA)[N11]	0.005	ug/L	< 0.005
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.005	ug/L	< 0.005
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.005	ug/L	< 0.005
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.005	ug/L	< 0.005
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.005	ug/L	< 0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.005	ug/L	< 0.005
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.005	ug/L	< 0.005
13C8-FOSA (surr.)	1	%	108
D3-N-MeFOSA (surr.)	1	%	66
D5-N-EtFOSA (surr.)	1	%	54
D7-N-MeFOSE (surr.)	1	%	79
D9-N-EtFOSE (surr.)	1	%	66
D5-N-EtFOSAA (surr.)	1	%	64
D3-N-MeFOSAA (surr.)	1	%	82
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)[N15]	0.001	ug/L	< 0.001
13C2-4:2 FTSA (surr.)	1	%	84
13C2-6:2 FTSA (surr.)	1	%	103
13C2-8:2 FTSA (surr.)	1	%	117

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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	Jun 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace	Brisbane	Jun 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances- Ultra Trace	Brisbane	Jun 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace	Brisbane	Jun 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jun 18, 2018 12:43 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:** **Phone:** **Fax:**	603377 (07) 3721 5400 (07) 3721 5401	**Due:** **Priority:** **Contact Name:**	Jun 25, 2018 5 Day Darcy Simpson
Project Name:	RTA WEIPA - VARIOUS SITES				
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC113	Jun 05, 2018		Water	S18-Jn18358	X
Test Counts						1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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	< 0.005			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	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.001			0.001	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.001			0.001	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							
Perfluorobutanesulfonic acid (PFBS)	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	< 0.005			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							
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)	%	82			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	148			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	82			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	90			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	90			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	92			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	74			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	88			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	106			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	64			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	92			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorobutanesulfonic acid (PFBS)	%	102			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	64			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	102			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	74			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	78			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	76			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Ultra Trace							
Perfluorooctane sulfonamide (FOSA)	%	112			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	90			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	88			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	66			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	72			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	92			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	82			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	82			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	68			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)	M18-Jn15844	NCP	%	84			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M18-Jn15844	NCP	%	146			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M18-Jn15844	NCP	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M18-Jn15844	NCP	%	87			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M18-Jn15844	NCP	%	100			50-150	Pass	
Perfluorononanoic acid (PFNA)	M18-Jn15844	NCP	%	89			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M18-Jn15844	NCP	%	78			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M18-Jn15844	NCP	%	73			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M18-Jn15844	NCP	%	104			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M18-Jn15844	NCP	%	70			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M18-Jn15844	NCP	%	77			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M18-Jn15844	NCP	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M18-Jn15844	NCP	%	82			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M18-Jn15844	NCP	%	96			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M18-Jn15844	NCP	%	87			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M18-Jn15844	NCP	%	88			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M18-Jn15844	NCP	%	68			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	M18-Jn15844	NCP	%	101			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M18-Jn15844	NCP	%	68			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M18-Jn15844	NCP	%	71			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M18-Jn15844	NCP	%	70			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M18-Jn15844	NCP	%	71			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M18-Jn15844	NCP	%	74			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M18-Jn15844	NCP	%	78			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M18-Jn15844	NCP	%	103			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	M18-Jn15844	NCP	%	91			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M18-Jn15844	NCP	%	79			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M18-Jn15844	NCP	%	55			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)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M18-Jn15845	NCP	ug/L	0.02	0.02	3.0	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M18-Jn15845	NCP	ug/L	0.02	0.02	5.0	30%	Pass	
Perfluorononanoic acid (PFNA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M18-Jn15845	NCP	ug/L	0.03	0.03	10	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	M18-Jn15845	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M18-Jn15845	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations 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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Site # 1254 & 14271

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Darcy Simpson
Project name:	RTA WEIPA - VARIOUS SITES
Project ID:	18100235
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 18, 2018 12:43 PM
Eurofins | mgt reference:	**603377**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 12.4 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Darcy Simpson - dasimpson@golder.com.au.

ABN– 50 005 085 521
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Site # 1254 & 14271

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NATA # 1261 Site # 18217

Brisbane
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NATA # 1261 Site # 20794

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NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jun 18, 2018 12:43 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:** **Phone:** **Fax:**	603377 (07) 3721 5400 (07) 3721 5401	**Due:** **Priority:** **Contact Name:**	Jun 25, 2018 5 Day Darcy Simpson
Project Name:	RTA WEIPA - VARIOUS SITES				
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC113	Jun 05, 2018		Water	S18-Jn18358	X
Test Counts						1

MG1

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet ..... of .....

Project No:	18100235	**Phase:**		**Lab Name:**	Eurofins
Site ID No.:	SAM	**Site Location:**	RTA Weipa - various sites	**Quote No.**	
Sampled By:				**Order No.:**	
Turnaround Time	24hrs ☐ 36hrs ☐		48hrs ☐ 5 Days ☐	Standard ■ Date Required By:	
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■		EXCEL ■	ESDAT ■	ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Greg Whitmore
Job Contact : Darcy Simpson
Phone: 07 40548200
Fax: 07 40548201
Reviewed:
Phone: 0412322026 Email:
dsimpson@golder.com.au
eroe@envirolab.com.au
cormsby@golder.com.au

Comments/Special Instructions:

ALS please send sample with field ID QC113 sent to Eurofins with this COC.

ANALYSIS REQUIRED

LAB ID	SAMPLE ID			SAMPLE DATE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	Per- and poly-fluoroalkyl substances (PFAS) - Ultra Trace															Comments
	QC113	-PS-	1/08/2038	5/06/2018	Water	1		X															

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample(GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Emma Cornish	Golder	15/06/2018	13:00
RECEIVED BY	Elvis D	Eurofins mgt	8/6/18	12:43PM
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

12.43C #603377

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Greg Whitmore**

Report **607361-W**
Project name
Project ID 18100235
Received Date Jul 12, 2018

Client Sample ID			**QC216_20180703**	**QC217_20180704**	**QC218_20180705**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**B18-Jl14141**	**B18-Jl14142**	**B18-Jl14143**
Date Sampled			**Jul 03, 2018**	**Jul 04, 2018**	**Jul 05, 2018**
Test/Reference	LOR	Unit			
PFASs Summations					
Sum (PFHxS + PFOS)*	0.001	ug/L	0.0072	0.0011	6.2
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	0.0042	0.0011	4.52
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	0.0072	0.0011	6.42
Sum of WA DER PFAS (n=10)*	0.005	ug/L	0.0082	< 0.005	7.411
Sum of PFASs (n=28)*	0.005	ug/L	0.0082	< 0.005	7.766
Perfluoroalkyl carboxylic acids (PFCAs) - Ultra Trace					
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005	< 0.005	0.062
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	< 0.001	< 0.001	[N09]0.12
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001	< 0.001	[N09]0.44
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001	< 0.001	[N09]0.10
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	< 0.001	< 0.001	[N09]0.22
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001	< 0.001	[N09]0.005
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C4-PFBA (surr.)	1	%	79	61	88
13C5-PFPeA (surr.)	1	%	106	74	96
13C5-PFHxA (surr.)	1	%	124	97	112
13C4-PFHpA (surr.)	1	%	111	94	98
13C8-PFOA (surr.)	1	%	134	117	98
13C5-PFNA (surr.)	1	%	136	123	111
13C6-PFDA (surr.)	1	%	118	112	70
13C2-PFUnDA (surr.)	1	%	84	78	78
13C2-PFDoDA (surr.)	1	%	96	78	100
13C2-PFTeDA (surr.)	1	%	70	48	84
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace					
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	0.001	< 0.001	0.25
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	< 0.001	[N09]0.23
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	[N09]0.003	< 0.001	[N09]1.9
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	< 0.001	[N09]0.12
Perfluorooctanesulfonic acid (PFOS)[N11]	0.0001	ug/L	[N09]0.0042	[N09]0.0011	[N09]4.3
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	105	91	89

Client Sample ID			QC216_20180703	QC217_20180704	QC218_20180705
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			B18-Jl14141	B18-Jl14142	B18-Jl14143
Date Sampled			Jul 03, 2018	Jul 04, 2018	Jul 05, 2018
Test/Reference	LOR	Unit			
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace					
18O2-PFHxS (surr.)	1	%	118	110	89
13C8-PFOS (surr.)	1	%	106	107	81
Perfluoroalkyl sulfonamido substances- Ultra Trace					
Perfluorooctane sulfonamide (FOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.005	ug/L	< 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
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.005	ug/L	< 0.005	< 0.005	< 0.005
13C8-FOSA (surr.)	1	%	86	77	77
D3-N-MeFOSA (surr.)	1	%	73	44	66
D5-N-EtFOSA (surr.)	1	%	91	54	85
D7-N-MeFOSE (surr.)	1	%	40	32	45
D9-N-EtFOSE (surr.)	1	%	44	30	44
D5-N-EtFOSAA (surr.)	1	%	108	98	104
D3-N-MeFOSAA (surr.)	1	%	81	83	75
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
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005	< 0.005	0.019
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.001	ug/L	< 0.001	< 0.001	< 0.001
13C2-4:2 FTSA (surr.)	1	%	130	91	97
13C2-6:2 FTSA (surr.)	1	%	126	110	133
13C2-8:2 FTSA (surr.)	1	%	144	142	137

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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	Jul 12, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace	Brisbane	Jul 12, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances- Ultra Trace	Brisbane	Jul 12, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace	Brisbane	Jul 12, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Site # 1254 & 14271

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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jul 12, 2018 10:44 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	607361	**Due:**	Jul 19, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:					
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC216_20180703	Jul 03, 2018		Water	B18-Jl14141	X
2	QC217_20180704	Jul 04, 2018		Water	B18-Jl14142	X
3	QC218_20180705	Jul 05, 2018		Water	B18-Jl14143	X
Test Counts						3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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	< 0.005			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	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.001			0.001	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.001			0.001	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							
Perfluorobutanesulfonic acid (PFBS)	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	< 0.005			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							
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)	%	91			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	76			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	87			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	86			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	90			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	82			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	89			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	89			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	90			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	142			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	91			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorobutanesulfonic acid (PFBS)	%	117			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	76			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	79			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	85			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	82			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	85			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Ultra Trace							
Perfluorooctane sulfonamide (FOSA)	%	90			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	89			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	82			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	93			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	91			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	81			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	74			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	86			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	79			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	69			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)	M18-Jl13730	NCP	%	95			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M18-Jl13730	NCP	%	75			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M18-Jl13730	NCP	%	94			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M18-Jl13730	NCP	%	90			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M18-Jl13730	NCP	%	96			50-150	Pass	
Perfluorononanoic acid (PFNA)	M18-Jl13730	NCP	%	89			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M18-Jl13730	NCP	%	95			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	M18-Jl13730	NCP	%	101			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	M18-Jl13730	NCP	%	100			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M18-Jl13730	NCP	%	132			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M18-Jl13730	NCP	%	101			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M18-Jl13730	NCP	%	113			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M18-Jl13730	NCP	%	92			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M18-Jl13730	NCP	%	92			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M18-Jl13730	NCP	%	85			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M18-Jl13730	NCP	%	101			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M18-Jl13730	NCP	%	93			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	M18-Jl13730	NCP	%	97			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M18-Jl13730	NCP	%	95			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M18-Jl13730	NCP	%	91			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M18-Jl13730	NCP	%	95			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M18-Jl13730	NCP	%	85			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M18-Jl13730	NCP	%	90			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M18-Jl13730	NCP	%	85			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M18-Jl13730	NCP	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	M18-Jl13730	NCP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M18-Jl13730	NCP	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M18-Jl13730	NCP	%	91			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)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M18-Jl13734	NCP	ug/L	0.04	0.04	4.0	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M18-Jl13734	NCP	ug/L	0.10	0.10	1.0	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M18-Jl13734	NCP	ug/L	0.15	0.14	1.0	30%	Pass	
Perfluorooctanoic acid (PFOA)	M18-Jl13734	NCP	ug/L	0.26	0.26	2.0	30%	Pass	
Perfluorononanoic acid (PFNA)	M18-Jl13734	NCP	ug/L	5.8	5.4	8.0	30%	Pass	
Perfluorodecanoic acid (PFDA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)- Ultra Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M18-Jl13734	NCP	ug/L	0.08	0.09	14	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M18-Jl13734	NCP	ug/L	0.04	0.03	2.0	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M18-Jl13734	NCP	ug/L	0.30	0.31	1.0	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M18-Jl13734	NCP	ug/L	0.01	0.01	7.0	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M18-Jl13734	NCP	ug/L	0.51	0.46	9.0	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances- Ultra Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Ultra Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	M18-Jl13734	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M18-Jl13734	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

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

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jul 12, 2018 10:44 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	607361	**Due:**	Jul 19, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:					
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Ultra Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC216_20180703	Jul 03, 2018		Water	B18-Jl14141	X
2	QC217_20180704	Jul 04, 2018		Water	B18-Jl14142	X
3	QC218_20180705	Jul 05, 2018		Water	B18-Jl14143	X
Test Counts						3

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name: **Golder Associates Pty Ltd (Qld)**

Contact name: Greg Whitmore
Project ID: 18100235
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Jul 12, 2018 10:44 AM
Eurofins | mgt reference: **607361**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 8.2 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Greg Whitmore - GWhitmore@golder.com.au.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	18100235	Phase:	4000/700	Lab Name:	Eurofins - Brisbane
Site ID No.:		Site Location:	Project Sam	Quote No.	#160715Q
Sampled By:	Emma Cornish			Order No.:	
Turnaround Time	24hrs ☐ 36hrs ☐		48hrs ☐ 5 Days ☐	Standard ☐ Date Required By:	Address: 1/21 Smallwood Place MURARRIE QLD 4172
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ☐	BULLETIN BOARD ☐
Report Format	PDF ☐		EXCEL ☐	ESDAT ☐	

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Phone: 07 40548200
Fax: 07 40548201
Project Manager: Greg Whitmore
Job Contact: Emma Cornish
Reviewed:
Phone: 0407334931 Email: ecornish@golder.com.au, gwhitmore@golder.com.au

GOLDER

Comments/Special Instructions: ALS please send samples to Eurofins

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	28 PFAS including PFOA/PFOS and 6:2 FTS (Standard Limit of Reporting)	28 PFAS including PFOA/PFOS and 6:2 FTS (Standard Limit of Reporting)	Perfluorooctanesulfonic acid (PFOS) - Ultra Trace and remaining PFAS analytes	Comments
	QC216_20180703		3/7/18	DS	WATER	1				X	
	QC217_20180704		4/7/18	DS	WATER	1				X	
	QC218_20180705		5/7/18	DS	WATER	1				X	

SAMPLE MATRIX – Soil/Sediment/Fill/Water/Other

SAMPLE TYPE – Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Cornish	GOLDER	9/7/18	10:00
RECEIVED BY	Jess H	ALS	10/7/18	9.45
RELEASED BY	D. Bradley	ALS	12/7/18	7.30
RECEIVED BY	G. Bland	Eurofins	12/7/18	10:44
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal	☐	Chilled	☐	Bill to:	
Suitable Containers	☐	Frozen	☐	Address	
Cool Box	☐	Ambient	☐		

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Greg Whitmore**

Report **608558-W**
Project name PROJECT SAM
Project ID 18100235
Received Date Jul 20, 2018

Client Sample ID			**QC219_17-7-2018**	**QC220_17-7-2018**
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**B18-Jl23038**	**B18-Jl23039**
Date Sampled			**Jul 17, 2018**	**Jul 17, 2018**
Test/Reference	LOR	Unit		
PFASs Summations				
Sum (PFHxS + PFOS)*	0.001	ug/L	0.002	< 0.001
Sum of US EPA PFAS (PFOS + PFOA)*	0.001	ug/L	< 0.001	< 0.001
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.001	ug/L	0.002	< 0.001
Sum of WA DER PFAS (n=10)*	0.005	ug/L	< 0.005	< 0.005
Sum of PFASs (n=28)*	0.005	ug/L	< 0.005	< 0.005
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				
Perfluorobutanoic acid (PFBA)[N11]	0.005	ug/L	< 0.005	< 0.005
Perfluoropentanoic acid (PFPeA)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluorohexanoic acid (PFHxA)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluoroheptanoic acid (PFHpA)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluorooctanoic acid (PFOA)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluorononanoic acid (PFNA)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluorodecanoic acid (PFDA)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluoroundecanoic acid (PFUnDA)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluorododecanoic acid (PFDoDA)[N11]	0.001	ug/L	< 0.001	0.001
Perfluorotridecanoic acid (PFTrDA)[N15]	0.001	ug/L	< 0.001	< 0.001
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.001	ug/L	< 0.001	< 0.001
13C4-PFBA (surr.)	1	%	173	167
13C5-PFPeA (surr.)	1	%	138	127
13C5-PFHxA (surr.)	1	%	132	123
13C4-PFHpA (surr.)	1	%	141	135
13C8-PFOA (surr.)	1	%	145	120
13C5-PFNA (surr.)	1	%	94	101
13C6-PFDA (surr.)	1	%	88	67
13C2-PFUnDA (surr.)	1	%	89	48
13C2-PFDoDA (surr.)	1	%	64	44
13C2-PFTeDA (surr.)	1	%	47	38
Perfluoroalkyl sulfonic acids (PFSAs)- Trace				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.001	ug/L	< 0.001	< 0.001
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.001	ug/L	[N09]0.002	< 0.001
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.001	ug/L	< 0.001	< 0.001
Perfluorooctanesulfonic acid (PFOS)[N11]	0.001	ug/L	< 0.001	< 0.001
Perfluorodecanesulfonic acid (PFDS)[N15]	0.001	ug/L	< 0.001	< 0.001
13C3-PFBS (surr.)	1	%	107	97

Client Sample ID			QC219_17-7-2018	QC220_17-7-2018
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**B18-Jl23038**	**B18-Jl23039**
Date Sampled			**Jul 17, 2018**	**Jul 17, 2018**
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonic acids (PFSAs)- Trace				
18O2-PFHxS (surr.)	1	%	112	111
13C8-PFOS (surr.)	1	%	77	62
Perfluoroalkyl sulfonamido substances- Trace				
Perfluorooctane sulfonamide (FOSA)[N11]	0.002	ug/L	< 0.002	< 0.002
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.002	ug/L	< 0.002	< 0.002
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.002	ug/L	< 0.002	< 0.002
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.002	ug/L	< 0.002	< 0.002
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.002	ug/L	< 0.002	< 0.002
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.002	ug/L	< 0.002	< 0.002
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.002	ug/L	< 0.002	< 0.002
13C8-FOSA (surr.)	1	%	71	48
D3-N-MeFOSA (surr.)	1	%	42	25
D5-N-EtFOSA (surr.)	1	%	41	29
D7-N-MeFOSE (surr.)	1	%	49	30
D9-N-EtFOSE (surr.)	1	%	47	28
D5-N-EtFOSAA (surr.)	1	%	85	44
D3-N-MeFOSAA (surr.)	1	%	96	55
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
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.005	ug/L	< 0.005	< 0.005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.001	ug/L	< 0.001	< 0.001
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.001	ug/L	< 0.001	< 0.001
13C2-4:2 FTSA (surr.)	1	%	137	115
13C2-6:2 FTSA (surr.)	1	%	91	75
13C2-8:2 FTSA (surr.)	1	%	53	37

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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) - Trace			
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	Brisbane	Jul 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)- Trace	Brisbane	Jul 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances- Trace	Brisbane	Jul 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace	Brisbane	Jul 20, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	PO10250	**Received:**	Jul 20, 2018 11:30 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	608558	**Due:**	Jul 27, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:	PROJECT SAM				
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC219_17-7-2018	Jul 17, 2018		Water	B18-JI23038	X
2	QC220_17-7-2018	Jul 17, 2018		Water	B18-JI23039	X
Test Counts						2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil 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. 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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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) - 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	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.001			0.001	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.001			0.001	Pass	
Perfluorotridecanoic acid (PFTrDA)	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	
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							
Perfluoroalkyl sulfonamido substances- Trace							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.002			0.002	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.002			0.002	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.002			0.002	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.002			0.002	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.002			0.002	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.002			0.002	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.002			0.002	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	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs) - Trace							
Perfluorobutanoic acid (PFBA)	%	80			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	140			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	84			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	92			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	88			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	86			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	74			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	90			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	134			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	74			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	88			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)- Trace							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorobutanesulfonic acid (PFBS)	%	86			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	70			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	106			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	76			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	82			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	112			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances- Trace							
Perfluorooctane sulfonamide (FOSA)	%	100			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	80			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	78			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	128			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	84			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	110			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	90			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	80			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	68			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1					
Perfluorobutanoic acid (PFBA)	S18-Jl23043	NCP	%	93			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S18-Jl23043	NCP	%	144			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S18-Jl23043	NCP	%	99			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S18-Jl23043	NCP	%	105			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S18-Jl23043	NCP	%	95			50-150	Pass	
Perfluorononanoic acid (PFNA)	S18-Jl23043	NCP	%	103			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S18-Jl23043	NCP	%	87			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S18-Jl23043	NCP	%	90			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S18-Jl23043	NCP	%	125			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S18-Jl23043	NCP	%	69			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S18-Jl23043	NCP	%	91			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)- Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S18-Jl23043	NCP	%	99			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S18-Jl23043	NCP	%	97			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S18-Jl23043	NCP	%	125			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S18-Jl23043	NCP	%	83			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S18-Jl23043	NCP	%	99			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S18-Jl23043	NCP	%	83			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances- Trace				Result 1					
Perfluorooctane sulfonamide (FOSA)	S18-Jl23043	NCP	%	114			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S18-Jl23043	NCP	%	93			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S18-Jl23043	NCP	%	94			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S18-Jl23043	NCP	%	98			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S18-Jl23043	NCP	%	71			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S18-Jl23043	NCP	%	99			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S18-Jl23043	NCP	%	92			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S18-Jl23043	NCP	%	122			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S18-Jl23043	NCP	%	93			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S18-Jl23043	NCP	%	99			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S18-Jl23043	NCP	%	60			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)- Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S18-Jl23042	NCP	ug/L	0.02	0.02	4.0	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances- Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)- Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S18-Jl23042	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S18-Jl23042	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
National Operations 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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Site # 1254 & 14271

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Greg Whitmore
Project name:	PROJECT SAM
Project ID:	18100235
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jul 20, 2018 11:30 AM
Eurofins | mgt reference:	**608558**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 12.8 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Greg Whitmore - GWhitmore@golder.com.au.

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NATA # 1261
Site # 1254 & 14271

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Lane Cove West NSW 2066
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NATA # 1261 Site # 18217

Brisbane
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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	PO10250	**Received:**	Jul 20, 2018 11:30 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	608558	**Due:**	Jul 27, 2018
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Greg Whitmore
Project Name:	PROJECT SAM				
Project ID:	18100235				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC219_17-7-2018	Jul 17, 2018		Water	B18-JI23038	X
2	QC220_17-7-2018	Jul 17, 2018		Water	B18-JI23039	X
Test Counts						2

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet..... of.....

Project No:	18100235	**Phase:**	2000	**Lab Name:**	**Eurofins - Brisbane**
Site ID No.:		**Site Location:**	Project Sam	**Quote No.**	**#160715Q**
Sampled By:	Emma Cornish			**Order No.:**	**PO10250**
Turnaround Time	24hrs ☐ 36hrs ☐		48hrs ☐ 5 Days ☐	Standard ■ Date Required By:	**Address:** 1/21 Smallwood Place MURARRIE QLD 4172
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■		EXCEL ■	ESDAT ■	

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Phone: 07 40548200
Fax 07 40548201
Project Manager: Greg Whitmore
Reviewed:
Job Contact : Emma Cornish
Phone: 0407334931 **Email:** ecornish@golder.com.au , gwhitmore@golder.com.au

GOLDER

Comments/Special Instructions: SECONDARY SAMPLES ALS PLEASE SEND TO EUROFINS BRISBANE

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	28 PFAS including PFOA/PFOS and 6:2 FTS (Standard Limit of Reporting)	28 PFAS including PFOA/PFOS and 6:2 FTS (Trace Limit of Reporting)	Perfluorooctanesulfonic acid (PFOS) - Ultra Trace and remaining PFAS analytes												Comments
	QC219_17-7-2018		17/07/2018		Water	1	Unknown		x													
	QC220_17-7-2018		17/07/2018		Water	1	Unknown		x													

SAMPLE MATRIX – Soil/Sediment/Fill/Water/Other
SAMPLE TYPE – Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)
HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Abigail SKAROKE	Golder Associates	18/7/18	9:30 AM
RECEIVED BY	M Bourke		20/7/18	11:30 AM
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY	ANDRIJUT				Shipping Ref:
RECEIVED BY		ALS	20.7.18	8:15	

To Be Filled Out By Analysing Laboratory — **LAB. BATCH NUMBER**

Security Seal		Chilled		Bill to:
Suitable Containers		Frozen		Address
Cool Box		Ambient		

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1721789**	Page	: 1 of 29
Amendment	: **3**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR IWAN OWEN	Contact	: Matt Frost
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 4054 8200	Telephone	: +61-7-3243 7222
Project	: 1780457	Date Samples Received	: 20-Oct-2017 09:20
Order number	: PO06133	Date Analysis Commenced	: 25-Oct-2017
C-O-C number	: ----	Issue Date	: 24-Nov-2017 08:21
Sampler	: ERIN CORBY		
Site	: ----		
Quote number	: EN/002/16 v2		
No. of samples received	: 52		
No. of samples analysed	: 52		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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.

- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EP231: Surrogate recovery bias low due to sample matrix interferences, confirmed by re-analysis.
- Amendment (23/11/2017): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue.
- EP231X: Sample "CHUBB - AFFF" required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.

Analytical Results

Sub-Matrix: Product (Matrix: PRODUCT)				Client sample ID	CHUBB - AFFF	----	----	----	----
				Client sampling date / time	19-Oct-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1721789-050	--------	--------	--------	--------
					Result	----	----	----	----
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	mg/kg		<10.0	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	mg/kg		<10.0	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	mg/kg		<10.0	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	mg/kg		<10.0	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.02	mg/kg		<10.0	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	mg/kg		<10.0	----	----	----	----
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	mg/kg		**986**	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	mg/kg		**1730**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	mg/kg		**1320**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	mg/kg		**130**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.02	mg/kg		<10.0	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	mg/kg		<10.0	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	mg/kg		<10.0	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	mg/kg		<10.0	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	mg/kg		<10.0	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	mg/kg		<10.0	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	mg/kg		<25.0	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	mg/kg		<10.0	----	----	----	----
EP231_TOP_C: Perfluoroalkyl Sulfonamides									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.02	mg/kg		<25.0	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	mg/kg		<25.0	----	----	----	----

Analytical Results

Sub-Matrix: Product (Matrix: PRODUCT)				Client sample ID	CHUBB - AFFF	----	----	----	----
				Client sampling date / time	19-Oct-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1721789-050	--------	--------	--------	--------
					Result	----	----	----	----
EP231_TOP_C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	mg/kg		<25.0	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	mg/kg		<25.0	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	mg/kg		<10.0	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	mg/kg		<10.0	----	----	----	----
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	mg/kg		<10.0	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	mg/kg		**198**	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	mg/kg		<10.0	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	mg/kg		<10.0	----	----	----	----
EP231_TOP_P: PFAS Sums									
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.02	mg/kg		<10.0	----	----	----	----
^ Sum of TOP C7 - C14 as fluorine	----	0.02	mg/kg		**88.3**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	mg/kg		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	mg/kg		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	mg/kg		<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	mg/kg		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.02	mg/kg		<0.02	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	mg/kg		<0.02	----	----	----	----

Analytical Results

Sub-Matrix: Product (Matrix: PRODUCT)				Client sample ID	CHUBB - AFFF	----	----	----	----
				Client sampling date / time	19-Oct-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1721789-050	--------	--------	--------	--------
					Result	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	mg/kg		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	mg/kg		**0.04**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	mg/kg		**0.54**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	mg/kg		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.02	mg/kg		**0.05**	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	mg/kg		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	mg/kg		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	mg/kg		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	mg/kg		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	mg/kg		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	mg/kg		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	mg/kg		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.02	mg/kg		<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	mg/kg		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	mg/kg		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	mg/kg		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	mg/kg		<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	mg/kg		<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	mg/kg		**0.18**	----	----	----	----

Analytical Results

Sub-Matrix: **Product** (Matrix: **PRODUCT**)				Client sample ID	**CHUBB - AFFF**	**----**	**----**	**----**	**----**
				Client sampling date / time	19-Oct-2017 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB1721789-050**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	mg/kg		**13.1**	**----**	**----**	**----**	**----**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	mg/kg		**0.30**	**----**	**----**	**----**	**----**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	mg/kg		<0.05	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP01 0.1-0.2	AP - TP01 0.8-1	AP - TP02 0.1-0.2	AP - TP02 0.8-1	AP - TP03 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-001	EB1721789-002	EB1721789-003	EB1721789-004	EB1721789-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**10.1**	**8.8**	**11.0**	**10.0**	**10.7**
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
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP01 0.1-0.2	AP - TP01 0.8-1	AP - TP02 0.1-0.2	AP - TP02 0.8-1	AP - TP03 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-001	EB1721789-002	EB1721789-003	EB1721789-004	EB1721789-005
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<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	%		**71.0**	**83.0**	**79.0**	**86.0**	**81.0**
13C8-PFOA	----	0.0002	%		**62.0**	**79.0**	**78.0**	**87.0**	**88.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP03 0.8-1	AP - TP04 0.1-0.2	AP - TP04 0.8-1	AP - TP05 0.1-0.2	AP - TP05 0.8-1
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-006	EB1721789-007	EB1721789-008	EB1721789-009	EB1721789-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**9.0**	**12.7**	**12.0**	**11.9**	**8.9**
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		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP03 0.8-1	AP - TP04 0.1-0.2	AP - TP04 0.8-1	AP - TP05 0.1-0.2	AP - TP05 0.8-1
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-006	EB1721789-007	EB1721789-008	EB1721789-009	EB1721789-010
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<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	%		**73.0**	**83.0**	**102**	**93.0**	**79.0**
13C8-PFOA	----	0.0002	%		**86.0**	**83.0**	**92.0**	**89.0**	**83.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP06 0.1-0.2	AP - TP06 0.8-1	AP - SS01 0-0.1	AP - SS02 0-0.1	AP - TP07 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-011	EB1721789-012	EB1721789-013	EB1721789-014	EB1721789-015
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**12.6**	**12.3**	**2.5**	**2.0**	**9.1**
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	**0.0003**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP06 0.1-0.2	AP - TP06 0.8-1	AP - SS01 0-0.1	AP - SS02 0-0.1	AP - TP07 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-011	EB1721789-012	EB1721789-013	EB1721789-014	EB1721789-015
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**78.0**	**84.0**	**74.0**	**44.0**	**90.0**
13C8-PFOA	----	0.0002	%		**83.0**	**56.0**	**55.0**	**20.0**	**55.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP07 0.8-1	AP - TP08 0.1-0.2	AP - TP08 0.8-1	AP - TP09 0.1-0.2	AP - TP09 0.8-1
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-016	EB1721789-017	EB1721789-018	EB1721789-019	EB1721789-020
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**8.8**	**9.7**	**10.1**	**8.5**	**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		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - TP07 0.8-1	AP - TP08 0.1-0.2	AP - TP08 0.8-1	AP - TP09 0.1-0.2	AP - TP09 0.8-1
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-016	EB1721789-017	EB1721789-018	EB1721789-019	EB1721789-020
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	<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	%		**95.0**	**93.0**	**92.0**	**99.0**	**89.0**
13C8-PFOA	----	0.0002	%		**53.0**	**71.0**	**64.0**	**69.0**	**71.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - SS03 0-0.1	QC104	AP - SS04 0-0.1	AP - SS05 0-0.1	FRTP - 10 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-021	EB1721789-022	EB1721789-023	EB1721789-024	EB1721789-025
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**1.8**	**1.8**	**2.2**	**1.5**	**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	**0.0076**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0029**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0024**	**0.0024**	<0.0002	<0.0002	**0.742**
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	**0.0025**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0032**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0009**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0028**
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	**0.0003**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AP - SS03 0-0.1	QC104	AP - SS04 0-0.1	AP - SS05 0-0.1	FRTP - 10 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-021	EB1721789-022	EB1721789-023	EB1721789-024	EB1721789-025
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	**0.0164**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	**0.0005**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0024**	**0.0024**	<0.0002	<0.0002	**0.780**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0024**	**0.0024**	<0.0002	<0.0002	**0.750**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0024**	**0.0024**	<0.0002	<0.0002	**0.776**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**37.0**	**39.0**	**39.0**	**23.0**	**86.0**
13C8-PFOA	----	0.0002	%		**33.0**	**37.0**	**31.0**	**15.0**	**66.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FRTP - 11 0.1-0.2	FRTP - 11 0.8-1	FRTP - 12 0.1-0.2	FRTP - 12 0.4-0.5	FRTP - 13 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-027	EB1721789-028	EB1721789-029	EB1721789-030	EB1721789-031
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**7.4**	**9.1**	**10.4**	**6.0**	**6.6**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	**0.0003**	**0.0005**	**0.0309**	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	**0.0011**	**0.0006**	**0.0082**	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0009**	**0.0680**	**0.0210**	**0.177**	**0.0018**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		**0.0003**	**0.0239**	**0.0028**	**0.0705**	**0.0002**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0612**	**0.641**	**2.43**	**1.88**	**0.0245**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		**0.0197**	**0.0004**	**0.0240**	**0.0011**	**0.0012**
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	**0.002**	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		**0.0002**	**0.0008**	**0.0021**	**0.0294**	**0.0008**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		**0.0003**	**0.0033**	**0.0065**	**0.0699**	**0.0014**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	**0.0015**	**0.0019**	**0.0096**	**0.0015**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		**0.0006**	**0.0189**	**0.0095**	**0.0657**	**0.0015**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	**0.0004**	**0.0015**	**0.0049**	**0.0003**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	**0.0011**	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	**0.0003**	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		**0.0002**	<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		**0.0024**	<0.0002	**0.0374**	**0.0016**	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	**0.0006**	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FRTP - 11 0.1-0.2	FRTP - 11 0.8-1	FRTP - 12 0.1-0.2	FRTP - 12 0.4-0.5	FRTP - 13 0.1-0.2
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-027	EB1721789-028	EB1721789-029	EB1721789-030	EB1721789-031
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	**0.0002**	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	**0.0006**	<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	**0.0019**	**0.0094**	**0.0268**	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0008**	<0.0005	**0.0014**	<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		**0.0866**	**0.762**	**2.55**	**2.38**	**0.0332**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0621**	**0.709**	**2.45**	**2.06**	**0.0263**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0640**	**0.736**	**2.48**	**2.29**	**0.0315**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**89.0**	**85.0**	**84.0**	**79.0**	**76.0**
13C8-PFOA	----	0.0002	%		**71.0**	**67.0**	**64.0**	**66.0**	**65.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	FRTP - 13 0.8-1	FRTP - 14 0.1-0.2	FRTP - 14 0.8-1	FRTP - SS07 0.0.1	FRTP - SS08 0.0.1
			Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit	EB1721789-032	EB1721789-033	EB1721789-034	EB1721789-035	EB1721789-036
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**8.1**	**7.0**	**6.6**	**17.1**	**15.2**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0010**	**0.0007**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0007**	**0.0008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0009**	**0.0030**	**0.0006**	**0.0093**	**0.0102**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	**0.0002**	**0.0009**	**0.0003**	**0.0008**	**0.0011**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0835**	**0.0346**	**0.0451**	**0.0361**	**0.0458**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	**0.0003**	<0.0002	<0.0002	**0.0039**	**0.0021**
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	**0.0027**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0004**	**0.0004**	**0.0003**	**0.0032**	**0.0010**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0006**	**0.0004**	**0.0003**	**0.0016**	**0.0003**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0011**	**0.0014**	**0.0011**	**0.0027**	**0.0009**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0005**	<0.0002	**0.0002**	**0.0005**	<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	**0.0014**	**0.0007**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FRTP - 13 0.8-1	FRTP - 14 0.1-0.2	FRTP - 14 0.8-1	FRTP - SS07 0.0.1	FRTP - SS08 0.0.1
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-032	EB1721789-033	EB1721789-034	EB1721789-035	EB1721789-036
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	**0.0006**
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		**0.0875**	**0.0407**	**0.0479**	**0.0639**	**0.0642**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0844**	**0.0376**	**0.0457**	**0.0454**	**0.0560**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0865**	**0.0398**	**0.0474**	**0.0566**	**0.0595**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**91.0**	**90.0**	**94.0**	**94.0**	**53.0**
13C8-PFOA	----	0.0002	%		**73.0**	**69.0**	**85.0**	**74.0**	**45.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FRTP - SS09 0.0.1	FRTP - SS10 0.0.1	FRTP - SS11 0.0.1	QC105	AHEQ - SS12 0.0.1
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	19-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-037	EB1721789-038	EB1721789-039	EB1721789-040	EB1721789-041
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**1.0**	**7.1**	**1.0**	**1.7**	**39.9**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		**0.0002**	<0.0002	**0.0002**	**0.0003**	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	**0.0003**	**0.0004**	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0032**	**0.0011**	**0.0032**	**0.0055**	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		**0.0002**	<0.0002	**0.0004**	**0.0006**	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0202**	**0.0047**	**0.0155**	**0.0206**	**0.0006**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		**0.0030**	**0.0017**	**0.0076**	**0.0099**	<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	**0.0054**	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		**0.0004**	**0.0064**	**0.0005**	**0.0008**	**0.0012**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	**0.0015**	<0.0002	**0.0002**	**0.0002**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		**0.0004**	**0.0022**	**0.0004**	**0.0005**	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	**0.0004**	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	**0.0004**	<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	**0.0006**	**0.0009**	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	FRTP - SS09 0.0.1	FRTP - SS10 0.0.1	FRTP - SS11 0.0.1	QC105	AHEQ - SS12 0.0.1
				Client sampling date / time	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	18-Oct-2017 00:00	19-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-037	EB1721789-038	EB1721789-039	EB1721789-040	EB1721789-041
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	**0.0741**	<0.0005	<0.0005	**0.0138**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	**0.0128**	<0.0005	<0.0005	**0.0036**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	**0.0038**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0276**	**0.111**	**0.0287**	**0.0397**	**0.0232**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0234**	**0.0058**	**0.0187**	**0.0261**	**0.0006**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0244**	**0.108**	**0.0198**	**0.0279**	**0.0194**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**94.0**	**99.0**	**106**	**93.0**	**93.0**
13C8-PFOA	----	0.0002	%		**73.0**	**67.0**	**58.0**	**52.0**	**37.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AHEQ - SS13 0.0.1	AHEQ - SS14 0.0.1	AHEQ - SS15 0.0.1	QC106	EWHEQ - SS16 0.0.1
				Client sampling date / time	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-042	EB1721789-043	EB1721789-044	EB1721789-045	EB1721789-046
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**1.4**	**14.7**	**1.6**	**14.2**	**3.4**
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		**0.0026**	<0.0002	<0.0002	<0.0002	**0.0004**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0004**	**0.0005**	**0.0021**	**0.0006**	**0.0012**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	**0.0004**	<0.0002	**0.0002**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0004**	**0.0054**	**0.0051**	**0.0069**	**0.0072**
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		**0.0062**	**0.0012**	**0.0003**	**0.0018**	**0.0086**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		**0.0014**	**0.0007**	**0.0006**	**0.0007**	**0.0083**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	**0.0004**	<0.0002	**0.0005**	**0.0016**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	**0.0006**	**0.0004**	**0.0007**	**0.0008**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	**0.0002**	<0.0002	**0.0004**	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	**0.0004**	<0.0002	**0.0006**	**0.0004**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	AHEQ - SS13 0.0.1	AHEQ - SS14 0.0.1	AHEQ - SS15 0.0.1	QC106	EWHEQ - SS16 0.0.1
				Client sampling date / time	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-042	EB1721789-043	EB1721789-044	EB1721789-045	EB1721789-046
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0021**	**0.0014**	**0.0061**	**0.0016**	**0.0343**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	**0.0017**	**0.0028**	**0.0018**	**0.0131**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	**0.0048**	**0.0017**	**0.0046**	**0.0040**
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0131**	**0.0173**	**0.0197**	**0.0205**	**0.0801**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0008**	**0.0059**	**0.0072**	**0.0075**	**0.0084**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0131**	**0.0119**	**0.0174**	**0.0146**	**0.0755**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**81.0**	**89.0**	**95.0**	**92.0**	**94.0**
13C8-PFOA	----	0.0002	%		**76.0**	**90.0**	**98.0**	**94.0**	**83.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	EWHEQ - SS17 0.0.1	EWHEQ - SS18 0.0.1	EWHEQ - SS19 0.0.1	AP - SS06 0-0.1	NO ID
				Client sampling date / time	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-047	EB1721789-048	EB1721789-049	EB1721789-052	EB1721789-053
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**3.4**	**18.9**	**74.9**	**1.9**	**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	**0.0006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0015**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0788**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	**0.0002**	<0.0002	**0.0358**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0011**	**0.0016**	**0.0047**	<0.0002	**1.08**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	**0.0009**	<0.0002	**0.0028**
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0026**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	**0.0016**	<0.0002	**0.0088**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0039**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	**0.0002**	<0.0002	**0.0315**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	**0.0010**
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	**0.0003**	<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	**0.0027**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	EWHEQ - SS17 0.0.1	EWHEQ - SS18 0.0.1	EWHEQ - SS19 0.0.1	AP - SS06 0-0.1	NO ID
				Client sampling date / time	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00	19-Oct-2017 00:00
Compound	CAS Number	LOR	Unit		EB1721789-047	EB1721789-048	EB1721789-049	EB1721789-052	EB1721789-053
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		**0.0044**	**0.0018**	**0.0106**	<0.0005	**0.0142**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		**0.0006**	**0.0019**	**0.0058**	<0.0005	**0.0096**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	**0.0017**	**0.0105**	<0.0005	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0061**	**0.0070**	**0.0348**	<0.0002	**1.27**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0011**	**0.0016**	**0.0047**	<0.0002	**1.16**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0061**	**0.0053**	**0.0229**	<0.0002	**1.23**
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**71.0**	**80.0**	**85.0**	**53.0**	**73.0**
13C8-PFOA	----	0.0002	%		**60.0**	**73.0**	**67.0**	**42.0**	**66.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC301	----	----	----	----
				Client sampling date / time	19-Oct-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1721789-051	--------	--------	--------	--------	
				Result	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	----	----	----	----	
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	----	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	----	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	----	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	----	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	----	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	----	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	----	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	----	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	----	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	----	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	----	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	----	----	----	----	

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC301	----	----	----	----
				Client sampling date / time	19-Oct-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1721789-051	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L		<0.005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L		<0.005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L		<0.002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L		<0.002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L		<0.005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L		<0.005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L		<0.005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L		<0.005	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.002	µg/L		<0.002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L		<0.002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L		<0.002	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.002	%		**64.4**	----	----	----	----
13C8-PFOA	----	0.002	%		**89.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	130
13C8-PFOA	----	60	130

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1721789**	Page	: 1 of 17
Amendment	: **3**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR IWAN OWEN	Contact	: Matt Frost
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 4054 8200	Telephone	: +61-7-3243 7222
Project	: 1780457	Date Samples Received	: 20-Oct-2017
Order number	: PO06133	Date Analysis Commenced	: 25-Oct-2017
C-O-C number	: ----	Issue Date	: 24-Nov-2017
Sampler	: ERIN CORBY		
Site	: ----		
Quote number	: EN/002/16 v2		
No. of samples received	: 52		
No. of samples analysed	: 52		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1197545)									
EB1721789-003	AP - TP02 0.1-0.2	EA055: Moisture Content	----	1	%	11.0	11.7	5.89	0% - 50%
EB1721789-014	AP - SS02 0-0.1	EA055: Moisture Content	----	1	%	2.0	2.1	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1197546)									
EB1721789-023	AP - SS04 0-0.1	EA055: Moisture Content	----	1	%	2.2	2.0	7.73	No Limit
EB1721789-035	FRTP - SS07 0.0.1	EA055: Moisture Content	----	1	%	17.1	15.9	7.68	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1197547)									
EB1721789-044	AHEQ - SS15 0.0.1	EA055: Moisture Content	----	1	%	1.6	1.9	17.5	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1197274)									
EB1721789-001	AP - TP01 0.1-0.2	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1721789-011	AP - TP06 0.1-0.2	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1197276)									
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1197276) - continued									
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0024	0.0020	18.8	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1721789-032	FRTP - 13 0.8-1	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0009	0.0010	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0002	0.0003	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0835	0.0818	2.04	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0003	0.0003	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1198311)									
EB1721758-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0010	0.0011	15.2	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1721789-042	AHEQ - SS13 0.0.1	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0026	0.0032	22.6	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0006	33.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0004	0.0006	23.6	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1197274)									
EB1721789-001	AP - TP01 0.1-0.2	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1721789-011	AP - TP06 0.1-0.2	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1197274) - continued									
EB1721789-011	AP - TP06 0.1-0.2	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1197276)									
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1721789-032	FRTP - 13 0.8-1	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0004	0.0005	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0006	0.0007	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0011	0.0012	14.2	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0005	0.0005	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1198311)									
EB1721758-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1198311) - continued									
EB1721789-042	AHEQ - SS13 0.0.1	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0062	0.0062	0.00	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0014	0.0018	22.6	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1197274)									
EB1721789-001	AP - TP01 0.1-0.2	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1721789-011	AP - TP06 0.1-0.2	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1197276)									
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1197276) - continued									
EB1721789-021	AP - SS03 0-0.1	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1721789-032	FRTP - 13 0.8-1	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1198311)									
EB1721758-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1721789-042	AHEQ - SS13 0.0.1	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1198311) - continued									
EB1721789-042	AHEQ - SS13 0.0.1	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1197274)									
EB1721789-001	AP - TP01 0.1-0.2	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1721789-011	AP - TP06 0.1-0.2	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1197276)									
EB1721789-021	AP - SS03 0-0.1	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1721789-032	FRTP - 13 0.8-1	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1197276) - continued									
EB1721789-032	FRTP - 13 0.8-1	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1198311)									
EB1721758-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1721789-042	AHEQ - SS13 0.0.1	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0021	0.0027	27.5	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0006	22.9	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1197290)									
EB1721655-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1197290)									
EB1721655-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1197290) - continued									
EB1721655-001	Anonymous	EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1197290)									
EB1721655-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1197290)									
EB1721655-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1197274)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	54	125
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1197276)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.2	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.9	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.2	54	125
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1198311)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197274)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	81.5	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.6	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	123	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.9	59	129
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197276)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	81.6	52	128

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197276) - continued								
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.4	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.2	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	59	129
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1198311)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	108	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.8	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197274)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.3	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.7	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.2	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.4	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.2	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	55	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197276)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	111	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	81.8	64	126

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197276) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.8	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.4	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.2	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	55	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1198311)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.9	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1197274)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	117	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	88.5	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	113	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1197276)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	107	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	119	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.2	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	115	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1198311)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	121	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	114	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	113	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	100	60	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1197290)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	95.6	50	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	91.4	50	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	84.4	50	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	78.2	50	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	65.0	50	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.05 µg/L	62.6	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197290)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.25 µg/L	74.8	50	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	98.4	50	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	80.8	50	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	86.0	50	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	87.0	50	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	75.6	50	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	72.0	50	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	60.4	40	130
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	67.6	40	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	54.2	40	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	123	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197290)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	61.2	40	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	54.6	40	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	44.2	40	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.125 µg/L	61.4	50	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	81.0	40	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	54.2	50	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	41.4	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1197290)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	98.4	50	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	75.8	50	130
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	80.6	50	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	85.6	50	130

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1197274)							
EB1721789-001	AP - TP01 0.1-0.2	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	106	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	102	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	116	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	104	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	77.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	89.0	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1197276)							
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	66.9	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	57.4	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	58.8	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	57.2	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	87.6	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	59.7	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1198311)							
EB1721758-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	81.6	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	88.8	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	90.4	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	72.4	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	80.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197274)							
EB1721789-001	AP - TP01 0.1-0.2	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	75.8	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	114	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	114	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	92.8	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	91.5	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	99.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	100	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	108	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	95.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.4	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	76.2	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197276)							
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	70.0	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	113	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	92.7	50	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197276) - continued							
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	57.4	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	53.2	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	55.6	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	51.3	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	52.1	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	54.7	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	52.6	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	49.9	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1198311)							
EB1721758-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	80.9	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	105	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	101	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	77.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	82.8	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	86.8	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	78.8	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	91.6	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	105	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	93.6	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	84.8	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197274)							
EB1721789-001	AP - TP01 0.1-0.2	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	85.8	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	70.3	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	57.6	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	52.0	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	68.5	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	93.9	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	101	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197276)							
EB1721789-021	AP - SS03 0-0.1	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	51.7	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	53.0	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	54.6	30	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197276) - continued							
EB1721789-021	AP - SS03 0-0.1	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	51.7	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	52.7	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	58.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	99.5	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1198311)							
EB1721758-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	81.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	89.6	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	81.9	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	82.7	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	80.0	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	84.8	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	106	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1197274)							
EB1721789-001	AP - TP01 0.1-0.2	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	111	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	97.7	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	97.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	96.4	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1197276)							
EB1721789-021	AP - SS03 0-0.1	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	89.1	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	68.1	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	61.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	61.5	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1198311)							
EB1721758-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	110	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	90.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	90.8	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	126	50	130

Sub-Matrix: **WATER**

		Matrix Spike (MS) Report		
		Spike	SpikeRecovery(%)	Recovery Limits (%)

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1197290)							
EB1721655-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	122	50	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	108	50	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	109	50	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	96.8	50	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	89.0	50	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.05 µg/L	60.0	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1197290)							
EB1721655-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.25 µg/L	88.7	30	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	85.0	50	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	117	50	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	97.8	50	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	102	50	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	110	50	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	81.4	50	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	65.4	30	130
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	65.8	30	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	63.6	30	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	107	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1197290)							
EB1721655-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	69.6	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	47.6	30	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	40.6	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.125 µg/L	48.4	30	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	80.9	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	49.2	30	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	42.2	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1197290)							
EB1721655-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	105	50	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	88.4	50	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	105	50	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	95.6	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1721789**	Page	: 1 of 12
Amendment	: **3**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MR IWAN OWEN	Telephone	: +61-7-3243 7222
Project	: 1780457	Date Samples Received	: 20-Oct-2017
Site	: ----	Issue Date	: 24-Nov-2017
Sampler	: ERIN CORBY	No. of samples received	: 52
Order number	: PO06133	No. of samples analysed	: 52

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP231S: PFAS Surrogate	EB1721789-021	AP - SS03 0-0.1	**13C4-PFOS**	----	37.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-022	QC104	**13C4-PFOS**	----	39.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-023	AP - SS04 0-0.1	**13C4-PFOS**	----	39.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-024	AP - SS05 0-0.1	**13C4-PFOS**	----	23.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-014	AP - SS02 0-0.1	**13C4-PFOS**	----	44.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-036	FRTP - SS08 0.0.1	**13C4-PFOS**	----	53.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-052	AP - SS06 0-0.1	**13C4-PFOS**	----	53.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-021	AP - SS03 0-0.1	**13C8-PFOA**	----	33.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-022	QC104	**13C8-PFOA**	----	37.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-023	AP - SS04 0-0.1	**13C8-PFOA**	----	31.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-024	AP - SS05 0-0.1	**13C8-PFOA**	----	15.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-012	AP - TP06 0.8-1	**13C8-PFOA**	----	56.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-013	AP - SS01 0-0.1	**13C8-PFOA**	----	55.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-014	AP - SS02 0-0.1	**13C8-PFOA**	----	20.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-015	AP - TP07 0.1-0.2	**13C8-PFOA**	----	55.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-036	FRTP - SS08 0.0.1	**13C8-PFOA**	----	45.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-016	AP - TP07 0.8-1	**13C8-PFOA**	----	53.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-039	FRTP - SS11 0.0.1	**13C8-PFOA**	----	58.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-040	QC105	**13C8-PFOA**	----	52.0 %	60-130 %	**Recovery less than lower data quality objective**
EP231S: PFAS Surrogate	EB1721789-052	AP - SS06 0-0.1	**13C8-PFOA**	----	42.0 %	60-130 %	**Recovery less than lower data quality objective**

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP231S: PFAS Surrogate	EB1721789-041	AHEQ - SS12 0.0.1	**13C8-PFOA**	----	37.0 %	60-130 %	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **PRODUCT**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container* / Client Sample ID(s)	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X (TOP))							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**30-Oct-2017**	17-Apr-2018	✓
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X (TOP))							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**30-Oct-2017**	17-Apr-2018	✓
EP231_TOP_C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X (TOP))							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**30-Oct-2017**	17-Apr-2018	✓
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X (TOP))							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**30-Oct-2017**	17-Apr-2018	✓
EP231_TOP_P: PFAS Sums							
HDPE (no PTFE) (EP231X (TOP))							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**30-Oct-2017**	17-Apr-2018	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**08-Nov-2017**	17-Apr-2018	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**08-Nov-2017**	17-Apr-2018	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**08-Nov-2017**	17-Apr-2018	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
CHUBB - AFFF	**19-Oct-2017**	**----**	----	----	**08-Nov-2017**	17-Apr-2018	✓

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)							
AP - TP01 0.1-0.2, AP - TP01 0.8-1, AP - TP02 0.1-0.2, AP - TP02 0.8-1, AP - TP03 0.1-0.2, AP - TP03 0.8-1, AP - TP04 0.1-0.2, AP - TP04 0.8-1, AP - TP05 0.1-0.2, AP - TP05 0.8-1, AP - TP06 0.1-0.2, AP - TP06 0.8-1, AP - SS01 0-0.1, AP - SS02 0-0.1, AP - TP07 0.1-0.2, AP - TP07 0.8-1, AP - TP08 0.1-0.2, AP - TP08 0.8-1, AP - TP09 0.1-0.2, AP - TP09 0.8-1, AP - SS03 0-0.1, QC104, AP - SS04 0-0.1, AP - SS05 0-0.1, FRTP - 10 0.1-0.2, FRTP - 11 0.1-0.2, FRTP - 11 0.8-1, FRTP - 12 0.1-0.2, QC105, FRTP - 12 0.4-0.5, FRTP - 13 0.1-0.2, FRTP - 13 0.8-1, FRTP - 14 0.1-0.2, FRTP - 14 0.8-1, FRTP - SS07 0.0.1, FRTP - SS08 0.0.1, FRTP - SS09 0.0.1, FRTP - SS10 0.0.1, FRTP - SS11 0.0.1	**18-Oct-2017**	**----**	----	----	**25-Oct-2017**	01-Nov-2017	✓
HDPE Soil Jar (EA055)							
AHEQ - SS12 0.0.1, AHEQ - SS13 0.0.1, AHEQ - SS14 0.0.1, AHEQ - SS15 0.0.1, QC106, EWHEQ - SS16 0.0.1, EWHEQ - SS17 0.0.1, EWHEQ - SS18 0.0.1, EWHEQ - SS19 0.0.1, AP - SS06 0-0.1, NO ID	**19-Oct-2017**	**----**	----	----	**25-Oct-2017**	02-Nov-2017	✓

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)							
AP - TP01 0.1-0.2, AP - TP01 0.8-1, AP - TP02 0.1-0.2, AP - TP02 0.8-1, AP - TP03 0.1-0.2, AP - TP03 0.8-1, AP - TP04 0.1-0.2, AP - TP04 0.8-1, AP - TP05 0.1-0.2, AP - TP05 0.8-1, AP - TP06 0.1-0.2, AP - TP06 0.8-1, AP - SS01 0-0.1, AP - SS02 0-0.1, AP - TP07 0.1-0.2, AP - TP07 0.8-1, AP - TP08 0.1-0.2, AP - TP08 0.8-1, AP - TP09 0.1-0.2, AP - TP09 0.8-1, AP - SS03 0-0.1, QC104, AP - SS04 0-0.1, AP - SS05 0-0.1, FRTP - 10 0.1-0.2, FRTP - 11 0.1-0.2, FRTP - 11 0.8-1, FRTP - 12 0.1-0.2, QC105, FRTP - 12 0.4-0.5, FRTP - 13 0.1-0.2, FRTP - 13 0.8-1, FRTP - 14 0.1-0.2, FRTP - 14 0.8-1, FRTP - SS07 0.0.1, FRTP - SS08 0.0.1, FRTP - SS09 0.0.1, FRTP - SS10 0.0.1, FRTP - SS11 0.0.1	**18-Oct-2017**	**26-Oct-2017**	16-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓
HDPE Soil Jar (EP231X)							
AHEQ - SS12 0.0.1, AHEQ - SS13 0.0.1, AHEQ - SS14 0.0.1, AHEQ - SS15 0.0.1, QC106, EWHEQ - SS16 0.0.1, EWHEQ - SS17 0.0.1, EWHEQ - SS18 0.0.1, EWHEQ - SS19 0.0.1, AP - SS06 0-0.1, NO ID	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓

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)									
AP - TP01 0.1-0.2,	AP - TP01 0.8-1,		**18-Oct-2017**	**26-Oct-2017**	16-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓
AP - TP02 0.1-0.2,	AP - TP02 0.8-1,								
AP - TP03 0.1-0.2,	AP - TP03 0.8-1,								
AP - TP04 0.1-0.2,	AP - TP04 0.8-1,								
AP - TP05 0.1-0.2,	AP - TP05 0.8-1,								
AP - TP06 0.1-0.2,	AP - TP06 0.8-1,								
AP - SS01 0-0.1,	AP - SS02 0-0.1,								
AP - TP07 0.1-0.2,	AP - TP07 0.8-1,								
AP - TP08 0.1-0.2,	AP - TP08 0.8-1,								
AP - TP09 0.1-0.2,	AP - TP09 0.8-1,								
AP - SS03 0-0.1,	QC104,								
AP - SS04 0-0.1,	AP - SS05 0-0.1,								
FRTP - 10 0.1-0.2,	FRTP - 11 0.1-0.2,								
FRTP - 11 0.8-1,	FRTP - 12 0.1-0.2,								
QC105,	FRTP - 12 0.4-0.5,	FRTP - 13 0.1-0.2,							
FRTP - 13 0.8-1,	FRTP - 14 0.1-0.2,								
FRTP - 14 0.8-1,	FRTP - SS07 0.0.1,								
FRTP - SS08 0.0.1,	FRTP - SS09 0.0.1,								
FRTP - SS10 0.0.1,	FRTP - SS11 0.0.1								
HDPE Soil Jar (EP231X)									
AHEQ - SS12 0.0.1,	AHEQ - SS13 0.0.1,		**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓
AHEQ - SS14 0.0.1,	AHEQ - SS15 0.0.1,								
QC106,	EWHEQ - SS16 0.0.1,								
EWHEQ - SS17 0.0.1,	EWHEQ - SS18 0.0.1,								
EWHEQ - SS19 0.0.1,	AP - SS06 0-0.1,								
NO ID									

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)							
AP - TP01 0.1-0.2, AP - TP01 0.8-1, AP - TP02 0.1-0.2, AP - TP02 0.8-1, AP - TP03 0.1-0.2, AP - TP03 0.8-1, AP - TP04 0.1-0.2, AP - TP04 0.8-1, AP - TP05 0.1-0.2, AP - TP05 0.8-1, AP - TP06 0.1-0.2, AP - TP06 0.8-1, AP - SS01 0-0.1, AP - SS02 0-0.1, AP - TP07 0.1-0.2, AP - TP07 0.8-1, AP - TP08 0.1-0.2, AP - TP08 0.8-1, AP - TP09 0.1-0.2, AP - TP09 0.8-1, AP - SS03 0-0.1, QC104, AP - SS04 0-0.1, AP - SS05 0-0.1, FRTP - 10 0.1-0.2, FRTP - 11 0.1-0.2, FRTP - 11 0.8-1, FRTP - 12 0.1-0.2, QC105, FRTP - 12 0.4-0.5, FRTP - 13 0.1-0.2, FRTP - 13 0.8-1, FRTP - 14 0.1-0.2, FRTP - 14 0.8-1, FRTP - SS07 0.0.1, FRTP - SS08 0.0.1, FRTP - SS09 0.0.1, FRTP - SS10 0.0.1, FRTP - SS11 0.0.1	**18-Oct-2017**	**26-Oct-2017**	16-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓
HDPE Soil Jar (EP231X)							
AHEQ - SS12 0.0.1, AHEQ - SS13 0.0.1, AHEQ - SS14 0.0.1, AHEQ - SS15 0.0.1, QC106, EWHEQ - SS16 0.0.1, EWHEQ - SS17 0.0.1, EWHEQ - SS18 0.0.1, EWHEQ - SS19 0.0.1, AP - SS06 0-0.1, NO ID	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓

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)									
AP - TP01 0.1-0.2,	AP - TP01 0.8-1,		**18-Oct-2017**	**26-Oct-2017**	16-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓
AP - TP02 0.1-0.2,	AP - TP02 0.8-1,								
AP - TP03 0.1-0.2,	AP - TP03 0.8-1,								
AP - TP04 0.1-0.2,	AP - TP04 0.8-1,								
AP - TP05 0.1-0.2,	AP - TP05 0.8-1,								
AP - TP06 0.1-0.2,	AP - TP06 0.8-1,								
AP - SS01 0-0.1,	AP - SS02 0-0.1,								
AP - TP07 0.1-0.2,	AP - TP07 0.8-1,								
AP - TP08 0.1-0.2,	AP - TP08 0.8-1,								
AP - TP09 0.1-0.2,	AP - TP09 0.8-1,								
AP - SS03 0-0.1,	QC104,								
AP - SS04 0-0.1,	AP - SS05 0-0.1,								
FRTP - 10 0.1-0.2,	FRTP - 11 0.1-0.2,								
FRTP - 11 0.8-1,	FRTP - 12 0.1-0.2,								
QC105,	FRTP - 12 0.4-0.5,	FRTP - 13 0.1-0.2,							
FRTP - 13 0.8-1,	FRTP - 14 0.1-0.2,								
FRTP - 14 0.8-1,	FRTP - SS07 0.0.1,								
FRTP - SS08 0.0.1,	FRTP - SS09 0.0.1,								
FRTP - SS10 0.0.1,	FRTP - SS11 0.0.1								
HDPE Soil Jar (EP231X)									
AHEQ - SS12 0.0.1,	AHEQ - SS13 0.0.1,		**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓
AHEQ - SS14 0.0.1,	AHEQ - SS15 0.0.1,								
QC106,	EWHEQ - SS16 0.0.1,								
EWHEQ - SS17 0.0.1,	EWHEQ - SS18 0.0.1,								
EWHEQ - SS19 0.0.1,	AP - SS06 0-0.1,								
NO ID									

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)							
AP - TP01 0.1-0.2, AP - TP01 0.8-1, AP - TP02 0.1-0.2, AP - TP02 0.8-1, AP - TP03 0.1-0.2, AP - TP03 0.8-1, AP - TP04 0.1-0.2, AP - TP04 0.8-1, AP - TP05 0.1-0.2, AP - TP05 0.8-1, AP - TP06 0.1-0.2, AP - TP06 0.8-1, AP - SS01 0-0.1, AP - SS02 0-0.1, AP - TP07 0.1-0.2, AP - TP07 0.8-1, AP - TP08 0.1-0.2, AP - TP08 0.8-1, AP - TP09 0.1-0.2, AP - TP09 0.8-1, AP - SS03 0-0.1, QC104, AP - SS04 0-0.1, AP - SS05 0-0.1, FRTP - 10 0.1-0.2, FRTP - 11 0.1-0.2, FRTP - 11 0.8-1, FRTP - 12 0.1-0.2, QC105, FRTP - 12 0.4-0.5, FRTP - 13 0.1-0.2, FRTP - 13 0.8-1, FRTP - 14 0.1-0.2, FRTP - 14 0.8-1, FRTP - SS07 0.0.1, FRTP - SS08 0.0.1, FRTP - SS09 0.0.1, FRTP - SS10 0.0.1, FRTP - SS11 0.0.1	**18-Oct-2017**	**26-Oct-2017**	16-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓
HDPE Soil Jar (EP231X)							
AHEQ - SS12 0.0.1, AHEQ - SS13 0.0.1, AHEQ - SS14 0.0.1, AHEQ - SS15 0.0.1, QC106, EWHEQ - SS16 0.0.1, EWHEQ - SS17 0.0.1, EWHEQ - SS18 0.0.1, EWHEQ - SS19 0.0.1, AP - SS06 0-0.1, NO ID	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	05-Dec-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL)							
QC301	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	17-Apr-2018	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL)							
QC301	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	17-Apr-2018	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-LL)							
QC301	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	17-Apr-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL)							
QC301	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	17-Apr-2018	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-LL)							
QC301	**19-Oct-2017**	**26-Oct-2017**	17-Apr-2018	✓	**26-Oct-2017**	17-Apr-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	5	50	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
PFAS in Foam Concentrate	EP231X	WATER	In House: 0.5 g of a foam concentrate is made up to 500 mL in reagent water. A 1 mL aliquot is further diluted with 1mL of methanol. Isotopically labelled internals standards are added. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
PFAS in Foam Concentrate after Oxidation (TOP)	EP231X (TOP)	WATER	In House: 0.5 g of a foam concentrate is made up to 500 mL in reagent water. A 5 mL aliquot digested with heat and persulfate under basic conditons following the method of Houtz et al. After digestion the sample is neutralised and 1 mL portion is further diluted with 1mL of methanol. Isotopically labelled internals standards are added. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS	EP231-PR	SOIL	In house
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house
Total Oxidisable Precuror Digest for PFAS	* ORG70-W	WATER	In-House with oxidation per Houtz, Erika F.; Sedlak, David L. (2012): Oxidative Conversion as a Means of Detecting Precursors to Perfluoroalkyl Acids in Urban Runoff. In Environmental Science & Technology 46 (17), pp. 9342¿9349: A 5 mL sample is digested with persulfate under alkaline conditions, neutralised and prepared for analysis per EP231.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet 1 of 6

Project No:	1780457	Project:		Lab Name:	ALS - Brisbane
Site ID No.:		Site Location:	WORK AST	Quote No.	EN/002/16V2
Sampled By:			E.R.C.	Order No.:	PO06133
Turnaround Time	24hrs ☐ Mins ☐		48hrs ☐ 5 Days ☐	Standard ■ Date Required By:	Stafford QLD 4053 AUSTRALIA
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■		EXCEL ■	ESDAT ■	ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD
214 Draper St, Cairns, 4870
Project Manager: Jane Orton
Job Contact: Emma Cornish
Phone: 07 40548200
Fax: 07 40548201
Delivery: 0407334031 Email: ecornish@golder.com.au

Golder Associates

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Full Suite TOPA (28 Analytes) (EP231X (TOP))	ASLP Leach ((non-volatile) (BN/00) (Deionised water)) - PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS TOPA LL (EP231X - LL)			Comments
1	AP-TP01	0.1-0.2	18/10/17	DS	Soil	1		X							
2	AP-TP01	0.8-1	18/10/17	DS	Soil	1		X							
3	AP-TP02	0.1-0.2	18/10/17	DS	Soil	1		X							
4	AP-TP02	0.8-1	18/10/17	DS	Soil	1		X							
5	AP-TP03	0.1-0.2	18/10/17	DS	Soil	1		X							
6	AP-TP03	0.8-1	18/10/17	DS	Soil	1		X							
7	AP-TP04	0.1-0.2	18/10/17	DS	Soil	1		X							
8	AP-TP04	0.8-1	18/10/17	DS	Soil	1		X							
9	AP-TP05	0.1-0.2	18/10/17	DS	Soil	1		X							
10	AP-TP05	0.8-1	18/10/17	DS	Soil	1		X							

Environmental Division
Brisbane
Work Order Reference
EB1721789

Telephone : +61-7-3243 7222

SAMPLE MATRIX – Soil/Sediment/Fill/Water/Other; SAMPLE TYPE – Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS); HIGH CONCENTRATION – circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E.R.C. E. Cornish	GOLDER	19/10/17	11:00
RECEIVED BY	Michelle	ALS	20/10/17	9:20
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Ice/Wet	
Suitable Containers		Frozen		Ambient	
Cool Box		Ambient			

KLJ
SNT003
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	17610457	Phase:		Lab Name:	ALS - Brisbane
Site ID No.:		Site Location:	Weipa PSI	Quote No:	EN/002/16V2
Sampled By:		BRL		Order No.:	PO88133
Turnaround Time:	24hrs ☐	48hrs ☐	Standard ■	Invoice to: Hyder Consulting Pty Ltd (Att: Accounts Payable) Stafford QLD 4053 AUSTRALIA	
	36hrs ☐	5 Days ☐	Date Required By:		
Delivery Option:	HARD ☐	FAX ☐ DISK ☐	EMAIL ■	BULLETIN BOARD ☐	
Report Format:	PDF ■	EXCEL ■	ESDAT ■	ENVIROSYS ■	

GOLDER ASSOCIATES PTY LTD			Phone:	07 4654 8200	Golder Associates
216 Draper St, Cairns, 4870			Fax:	[07 4654 8201]	
Project Manager:	Iwan Offrein		Reviewed:		
Job Contact :	Vincent Cornish		Phone:	(0427334691)	Email: iowen@golder.com.au; vcornish@golder.com.au;

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Full Suite TOPA (28 Analytes) (EP231X (TOPAS))	ASLP Leach (1mg/volatile) (EA040) (Additional sample) PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS TOPA Full Suite (EP231X)	Comments
11	AP-TP06	0.1-0.2	18/10/17	DS	Soil	1		X					
12	AP-TP06	0.8-1	18/10/17	DS	Soil	1							
13	AP-SS01	0-0.1	18/10/17	DS	Soil	1		X					
14	AP-SS02	0-0.1	18/10/17	DS	Soil	1		X					
15	AP-TP07	0.1-0.2	18/10/17	DS	Soil	1		X					
16	AP-TP07	0.8-1	18/10/17	DS	Soil	1		X					
17	AP-TP08	0.1-0.2	18/10/17	DS	Soil	1		X					
18	AP-TP08	0.8-1	18/10/17	DS	Soil	1		X					
19	AP-TP09	0.1-0.2	18/10/17	DS	Soil	1		X					
20	AP-TP09	0.8-1	18/10/17	DS	Soil	1		X					

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Disturbed(DC)/Undisturbed(DS)/Cored(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Vincent Cornish	GOLDER	19/10/17	11:00
RECEIVED BY	Michelle	ALS	20/10/17	9:20
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

RL3
Sh7054
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	1780457	Name:		Lab Name:	ALS - Brisbane
Site ID No.:		Site Location:	Weipa PSI	Quote No.	EN/002/16V2
Sampled By:		ERC		Order No.:	PO06133
Turnaround Time	24hrs ☐	48hrs ☐	Standard ■	Report To (inc Name of Lab):	Stafford QLD 4053 AUSTRALIA
	36hrs ☐	5 Days ☐	Date Required By:		
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■	EXCEL ■	ESDAT ■	ENVIROSYS ■	

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Dean Owen
Job Contact: Emma Carrick

Phone: 07 40548200
Fax: 07 40548201
Reviewer:
Phone: 0407534031 Email: ecarrick@golder.com.au

Golder Associates

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Full Suite TOPA (21 Analytes) (EP231X (TOPA))	ASLP Leach (non-volatiles) (EP459) (Dilution used) PFAS - Full Suite Low Level (24 Analytes) (EP231X-LL)	PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS TOPA & EP231X-LL PFAS	Comments
21	AP-SS03	0-0.1	18/10/17	DS	Soil	1		X					
22	AP-QC04	-	18/10/17	DS	Soil	1		X					
23	AP-SS04	0-0.1	18/10/17	DS	Soil	1		X					
24	AP-SS05	0-0.1	18/10/17	DS	Soil	1		X					
25	FR-TP10	0.1-0.2	18/10/17	DS	Soil	1		X					
SMR - 26	FR-TP10	0.4-0.5	18/10/17	DS	Soil	1		X					
27	FR-TP11	0.1-0.2	18/10/17	DS	Soil	1		X					
28	FR-TP11	0.8-1	18/10/17	DS	Soil	1		X					
29	FR-TP12	0.1-0.2	18/10/17	DS	Soil	1		X					
30	FR-TP12	0.4-0.5	18/10/17	DS	Soil	1		X					

SAMPLE MATRIX - Soil/Sediment/Pill/Water/Other

SAMPLE TYPE - Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameter in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Carrick	GOLDER	19/10/17	11:00
RECEIVED BY	Michelle	ALS	20/10/17	9:20
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER:

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Bag		Ambient			

ELI
SMTH94
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	1750457	Phase:	
Site ID No.:		Site Location:	Weipa - PSI
Sampled By:	E. Corrish		
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ■		
	36hrs ☐ 5 Days ☐ Date Required By:		
Delivery Option:	HARD ☐ FAX ☐ DISK ☐ EMAIL ■ BULLETIN BOARD ☐		
Report Format:	PDF ■ EXCEL ■ ESDAT ■ ENVIROSYS ■		

Lab Name: ALS – Brisbane
Quote No.: EN/002/16V2
Order No.: PO06133
Stafford QLD 4053 AUSTRALIA

Comments/Special Instructions:

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Tony Owen
Job Contact: Emma Corrish

Phone: 07 40568200
Fax: 07 40545201
Ordered:
Phone: 0407134831 Email: ecorrish@golder.com.au
towen@golder.com.au

Golder Associates

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) (EP231A)	PFAS - Full Suite TOPA (28 Analytes) (EP231X (TOPAA))	ASLP Leach (room-volatile) (EN60) (Deionised water) / PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS TOPA (EP231X-LL)	Comments
31	FR-TP13	0.1-0.2	18/10/17	DS	Soil	1		X					
32	FR-TP13	0.8-1	18/10/17	DS	Soil	1		X					
33	FR-TP14	0.1-0.2	18/10/17	DS	Soil	1		X					
34	FR-TP14	0.8-1	18/10/17	DS	Soil	1		X					
35	FR-SS07	0-0.1	18/10/17	DS	Soil	1		X					
36	FR-SS08	0-0.1	18/10/17	DS	Soil	1		X					
37	FR-SS09	0-0.1	18/10/17	DS	Soil	1		X					
38	FR-SS10	0-0.1	18/10/17	DS	Soil	1		X					
39	FR-SS11	0-0.1	18/10/17	DS	Soil	1		X					
40	QC105	-	18/10/17	DS	Soil	1		X					

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other
SAMPLE TYPE = Composite(C)/Discrete(D)/Disturbed(DS)/Core(CR), Grab Sample (GS)
HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Corrish	Golder	19/10/17	11:20
RECEIVED BY	Michelle	ALS	20/10/17	9:20
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill To:	
Suitable Containers		Frozen		Address:	
Cool Bot		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

RLJ
SMF004
Feb 2013

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	1780457	Phase:	
Site ID No:		Site Location:	Weipa PSI
Sampled By:	ERC	Order No:	
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ■	36hrs ☐ 5 Days ☐ Date Required By:	
Delivery Option	HARD ☐ FAX ☐ DISK ☐ EMAIL ■	BULLETIN BOARD ☐	
Report Format	PDF ■ EXCEL ■ ESDAT ■	ENVIROSYS ■	

Lab Name: ALS – Brisbane
Quote No.: EN/002/16V2
PO86133
Stafford QLD 4053 AUSTRALIA

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Ivan Cross
Job Contact: Emma Cornish
Phone: 07 40548200
Fax: 07 40548201
Reference:
Phone: 0407234951 Email: emcornish@golder.com.au

Golder Associates

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Full Suite TOPA (28 Analytes) (EP231X TOPA)	ASLP Leach (non-volatile) (EN40) (Deionised water) + PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS TOPA LL (EP231X-LL)	Comments
41	AHEQ-SS12	0-0.1	19/10/17	DS	Soil	1		X					
42	AHEQ-SS13	0-0.1	19/10/17	DS	Soil	1		X					
43	AHEQ-SS14	0-0.1	19/10/17	DS	Soil	1		X					
44	AHEQ-SS15	0-0.1	19/10/17	DS	Soil	1		X					
45	QC106	–	19/10/17	DS	Soil	1		X					
46	EWHEQ-SS16	0-0.1	19/10/17	DS	Soil	1		X					
47	EWHEQ-SS17	0-0.1	19/10/17	DS	Soil	1		X					
48	EWHEQ-SS18	0-0.1	19/10/17	DS	Soil	1		X					
49	EWHEQ-SS19	0-0.1	19/10/17	DS	Soil	1		X					
50	CHUBB-AFFF	–	19/10/17	W	Water	1	High	X				X	

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(D)/Disturbed(US)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	E. Cornish	GOLDER	19/10/17	11:00
RECEIVED BY		ALS	20/10/17	9:17.0
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address:	
Cool Pax		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	1780457	Phone:		Lab Name:	ALS - Brisbane
Site ID No.:		Site Location:	Wagga WSF	Quote No.:	EN/002/16V2
Sampled By:			ERC	Order No.:	PO06133
Turnaround Time:	24hrs ☐ 36hrs ☐		48hrs ☐ 5 Days ☐	Standard ■ Date Required By:	Stuffed CLD 4053 AUSTRALIA
Delivery Option:	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format:	PDF ■		EXCEL ■	ESDAT ■	ENVIROSYS ■

Comments/Special Instructions:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)
51.	QC301		14/10/17	WS	Slates	1	

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Ivan Owen
Job Contact: Tamsin Cornish

Phone: 07 40548200
Fax: 07 40548201
Retrieved:
Phone: 0497334031 Email: tcornish@golder.com.au

Golder Associates

ANALYSIS REQUIRED

PFAS - Full Suite (28 Analytes) (EP231X)	PFAS - Full Suite TOPA (28 Analytes) (EP231Y (TOPA))	ASLP Leach (Inert-volatile) (EN80) (Deionised water) / PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)	PFAS LL EP231X-LL	Comments
			1 X		

SAMPLE MATRIX - Soil/Sediment/Fill/Water/Other

SAMPLE TYPE - Composite(C)/Discrete(DC)/Disturbed(DB)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list.

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	ERC E.Cornish	GOLDER	14/10/17	11:00
RECEIVED BY	Michelle	ALS	20/10/17	9:20
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:
Soluble Containers		Frozen		Address
Cool Box		Ambient		

THIS FORM IS TO BE SIGNED BY GOLDER STAFF, COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

RE3
SN1004
Feb 2011

eurofins | mgt

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Iwan Owen**

Report **568771-S**
Project name WEIPA - PSI
Project ID 1780457
Received Date Oct 20, 2017

Client Sample ID			**QC204**	**QC205**	**QC206**
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B17-Oc24961**	**B17-Oc24962**	**B17-Oc24963**
Date Sampled			**Oct 18, 2017**	**Oct 18, 2017**	**Oct 18, 2017**
Test/Reference	LOR	Unit			
PFASs Summations					
Sum (PFHxS + PFOS)	5	ug/kg	14	35.4	6.9
Sum of US EPA PFAS (PFOS + PFOA)	5	ug/kg	14	32	6.9
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	5	ug/kg	14	35.4	6.9
Sum of WA DER PFAS (n=10)	10	ug/kg	14	35.4	< 10
Sum of PFASs (n=28)	50	ug/kg	< 50	< 50	< 50
Perfluoroalkyl carboxylic acids (PFCAs) - Trace					
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	1	ug/kg	< 1	< 1	2.2
Perfluorohexanoic acid (PFHxA)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluoroheptanoic acid (PFHpA)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluorooctanoic acid (PFOA)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluorononanoic acid (PFNA)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluorodecanoic acid (PFDA)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluoroundecanoic acid (PFUnA)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluorododecanoic acid (PFDoA)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluorotridecanoic acid (PFTrDA)	1	ug/kg	< 1	< 1	< 1
Perfluorotetradecanoic acid (PFTeDA)[N11]	1	ug/kg	< 1	< 1	< 1
13C4-PFBA (surr.)	1	%	121	122	110
13C5-PFPeA (surr.)	1	%	141	153	124
13C5-PFHxA (surr.)	1	%	133	150	133
13C4-PFHpA (surr.)	1	%	143	169	138
13C8-PFOA (surr.)	1	%	141	158	142
13C5-PFNA (surr.)	1	%	138	127	138
13C6-PFDA (surr.)	1	%	147	138	146
13C2-PFUnDA (surr.)	1	%	178	148	188
13C2-PFDoDA (surr.)	1	%	158	94	162
13C2-PFTeDA (surr.)	1	%	158	91	153
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) -					
Perfluorobutanesulfonic acid (PFBS)[N11]	1	ug/kg	< 1	< 1	< 1
Perfluoropentanesulfonic acid (PFPeS)	1	ug/kg	< 1	< 1	< 1
Perfluorohexanesulfonic acid (PFHxS)[N11]	1	ug/kg	< 1	[N09]3.4	< 1
Perfluoroheptanesulfonic acid (PFHpS)	1	ug/kg	< 1	< 1	< 1
Perfluorooctanesulfonic acid (PFOS)[N11]	1	ug/kg	[N09]14	[N09]32	[N09]6.9
Perfluorodecanesulfonic acid (PFDS)	1	ug/kg	< 1	< 1	< 1
13C3-PFBS (surr.)	1	%	134	138	132

Client Sample ID			QC204	QC205	QC206
Sample Matrix			Soil	Soil	Soil
Eurofins | mgt Sample No.			B17-Oc24961	B17-Oc24962	B17-Oc24963
Date Sampled			Oct 18, 2017	Oct 18, 2017	Oct 18, 2017
Test/Reference	LOR	Unit			
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) -					
18O2-PFHxS (surr.)	1	%	141	144	142
13C8-PFOS (surr.)	1	%	153	130	161
Perfluoroalkane sulfonamides (PFASAs) - Trace					
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	5	ug/kg	< 5	< 5	< 5
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	5	ug/kg	< 5	< 5	< 5
13C8-FOSA (surr.)	1	%	152	98	134
D3-N-MeFOSA (surr.)	1	%	105	90	108
D5-N-EtFOSA (surr.)	1	%	114	91	114
D7-N-MeFOSE (surr.)	1	%	57	44	67
D9-N-EtFOSE (surr.)	1	%	99	71	114
D5-N-EtFOSAA (surr.)	1	%	127	93	148
D3-N-MeFOSAA (surr.)	1	%	148	88	146
n:2 Fluorotelomer sulfonic acids - Trace					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)[N11]	1	ug/kg	< 1	< 1	< 1
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)[N11]	5	ug/kg	< 5	< 5	< 5
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)[N11]	1	ug/kg	< 1	< 1	< 1
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	1	ug/kg	< 1	< 1	3.0
13C2-4:2 FTS (surr.)	1	%	133	INT	105
13C2-6:2 FTS (surr.)	1	%	124	INT	123
13C2-8:2 FTS (surr.)	1	%	117	155	114
% Moisture	1	%	1.5	1.1	14

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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 Polyfluorinated Alkyl Substances (PFASs) - Trace			
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	Brisbane	Oct 24, 2017	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace	Brisbane	Oct 24, 2017	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
Perfluoroalkane sulfonamides (PFASAs) - Trace	Brisbane	Oct 24, 2017	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
n:2 Fluorotelomer sulfonic acids - Trace	Brisbane	Oct 24, 2017	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
% Moisture	Brisbane	Oct 22, 2017	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	PO0164	**Received:**	Oct 20, 2017 4:30 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	568771	**Due:**	Oct 27, 2017
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Iwan Owen
Project Name:	WEIPA - PSI				
Project ID:	1780457				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Moisture Set	Per- and Polyfluorinated Alkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QC204	Oct 18, 2017		Soil	B17-Oc24961	X	X
2	QC205	Oct 18, 2017		Soil	B17-Oc24962	X	X
3	QC206	Oct 18, 2017		Soil	B17-Oc24963	X	X
Test Counts						3	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota 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. 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 Sample Receipt Advice.

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.

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

Units

mg/kg: milligrams per kilogram

ug/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

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

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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) - Trace							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 1			1	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 1			1	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 1			1	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 1			1	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 1			1	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 1			1	Pass	
Perfluoroundecanoic acid (PFUnA)	ug/kg	< 1			1	Pass	
Perfluorododecanoic acid (PFDoA)	ug/kg	< 1			1	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 1			1	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 1			1	Pass	
Method Blank							
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 1			1	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 1			1	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 1			1	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 1			1	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 1			1	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 1			1	Pass	
Method Blank							
Perfluoroalkane sulfonamides (PFASAs) - Trace							
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	< 5			5	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids - Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	ug/kg	< 1			1	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	ug/kg	< 1			1	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	ug/kg	< 1			1	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs) - Trace							
Perfluorobutanoic acid (PFBA)	%	117			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	105			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	102			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	110			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	108			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	113			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	111			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	%	114			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	%	114			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	133			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	112			50-150	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace							
Perfluorobutanesulfonic acid (PFBS)	%	97			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	117			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	108			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	126			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	111			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	93			50-150	Pass	
LCS - % Recovery							
Perfluoroalkane sulfonamides (PFASAs) - Trace							
Perfluorooctane sulfonamide (FOSA)	%	110			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	125			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	121			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	84			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	120			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	122			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	111			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids - Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	%	110			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	125			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	%	121			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	%	148			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1					
Perfluorobutanoic acid (PFBA)	B17-Oc24962	CP	%	100			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B17-Oc24962	CP	%	103			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B17-Oc24962	CP	%	96			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B17-Oc24962	CP	%	96			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B17-Oc24962	CP	%	93			50-150	Pass	
Perfluorononanoic acid (PFNA)	B17-Oc24962	CP	%	108			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B17-Oc24962	CP	%	103			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	B17-Oc24962	CP	%	109			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	B17-Oc24962	CP	%	115			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B17-Oc24962	CP	%	121			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B17-Oc24962	CP	%	115			50-150	Pass	
Spike - % Recovery									
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B17-Oc24962	CP	%	88			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B17-Oc24962	CP	%	95			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B17-Oc24962	CP	%	94			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B17-Oc24962	CP	%	113			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B17-Oc24962	CP	%	97			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B17-Oc24962	CP	%	56			50-150	Pass	
Spike - % Recovery									
Perfluoroalkane sulfonamides (PFASAs) - Trace				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctane sulfonamide (FOSA)	B17-Oc24962	CP	%	93			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B17-Oc24962	CP	%	113			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B17-Oc24962	CP	%	131			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B17-Oc24962	CP	%	86			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B17-Oc24962	CP	%	115			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B17-Oc24962	CP	%	110			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B17-Oc24962	CP	%	104			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids - Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	B17-Oc24962	CP	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	B17-Oc24962	CP	%	106			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	B17-Oc24962	CP	%	113			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	B17-Oc24962	CP	%	144			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B17-Oc25400	NCP	ug/kg	19	19	2.0	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkane sulfonamides (PFASAs) - Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B17-Oc25400	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B17-Oc25400	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids - Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	B17-Oc25400	NCP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	B17-Oc25400	NCP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B17-Se33088	NCP	%	32	29	9.0	30%	Pass	

Quality Control Analyte Summary Compliance

The table below is the actual occurrence of QC performed on the batch of samples within this report and as defined below

Analysis	Samples Analysed	Laboratory Duplicates Reported	Laboratory Matrix Spikes Reported	Method Blanks Reported	Laboratory Control Samples Reported
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	3	1	1	1	1
Perfluoroalkane sulfonic acids & Perfluoroalkane	3	1	1	1	1
Perfluoroalkane sulfonamides (PFASAs) - Trace	3	1	1	1	1
n:2 Fluorotelomer sulfonic acids - Trace	3	1	1	1	1
% Moisture	3	1	NA	NA	NA

Quality Control Parameter Frequency Compliance follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure April 2011, Schedule B3, Guideline on Laboratory Analysis of Potentially Contaminated Soils and US EPA SW-846 Chapter 1: 'Quality Control'.

It comprises the following when a laboratory process batch is deemed to consist of up to 20 samples that are similar in terms of matrix and test procedure, and are processed as one unit for QC purposes. If more than 20 samples are being processed, they are considered as more than one batch.

Method blank

One method blank per process batch.

Laboratory duplicate

There should be at least one duplicate per process batch, or two duplicates if the process batch exceeds 10 samples.

Laboratory control sample (LCS)

There should be at least one LCS per process batch.

Matrix spikes

There should be one matrix spike per matrix type per process batch.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds. 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

Ryan Gilbert	Analytical Services Manager
Bryan Wilson	Senior Analyst-Metal (QLD)
Jonathon Angell	Senior Analyst-Inorganic (QLD)
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson

National Operations 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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SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet..... of.....

Project No:	1780457	**Phase:**		**Lab Name:**	Eurofins - Brisbane
Site ID No.:		**Site Location:**	Weipa - PSI	**Quote No.**	#160715Q
Sampled By:	Emma Cornish			**Order No.:**	PO0164
Turnaround Time	24hrs ☐	48hrs ☐	Standard ■	**Address:** 1/21 Smallwood Place MURARRIE QLD 4172	
	36hrs ☐	5 Days ☐	Date Required By:		
Delivery Option	HARD ☐ FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐	
Report Format	PDF ■	EXCEL ■	ESDAT ■		

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Project Manager: Iwan Owen
Job Contact : Emma Cornish
Phone: 07 40548200
Fax: 07 40548201
Reviewed:
Phone: 0407334931 Email: iowen@golder.com.au, ecornish@golder.com.au

Golder Associates

Comments/Special Instructions: Secondary Samples ALS - please send to Eurofins

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite Low Level (28 Analytes)				PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)										Comments
	~~QC234~~							~~X~~				~~X~~										
	QC205	–	18/10/17		Soil	1		X														
	QC206	–	18/10/17		Soil	1		X														

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Emma Cornish	GOLDER	19/10/17	11:00
RECEIVED BY	Michelle	ALS	20/10/17	9.10.
RELEASED BY	Michelle	ALS	20/10/17	12:04
RECEIVED BY	[illegible]	EUROFINS	20/10/17	4:30pm
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER 4720,

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

RL3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Iwan Owen
Project name:	WEIPA - PSI
Project ID:	1780457
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Oct 20, 2017 4:30 PM
Eurofins | mgt reference:	**568771**

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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Iwan Owen - iowen@golder.com.au.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **E1 87446GG**	Page	: 1 of 7
Client	: **DOLi ER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Contact	: Matt Frost
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 4724 0311	Telephone	: +61-7-3243 7222
Project	: 1780457	Date Samples Received	: 27-Oct-2017 09:40
Order number	: PO06133	Date Analysis Commenced	: 01-Nov-2017
C-O-C number	: ----	Issue Date	: 07-Nov-2017 14:55
Sampler	: ----		
Site	: GW - EWHEQ and AFD		
Quote number	: EN/002/16 v2		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Addtrtoal f tarorp l rtoa herrtaean ro rstw rehorn b tff ue rogad ta rse roffob tac wehl rl re l rrl Qsp earw: y gl ftn Coarrof Rehorn/ y Awy C Cop hftl aQs Awwewwp ean ro l wwtwn b trs y gl ftn Re. teb l ad Sl p hfe ReQethnNortntQl rtoa^

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Pabi Subba	Senior Organic Chemist	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Where the LOR 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
H = 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.

- **Aal f, wtwb tff ue QpadgQred u, ALS Ea. troap earl f/ S, dae, / NATA l QQredtrl rtoa ao^- 4M Stre No^80G88 53 tQro wtre ao^82G86(^**

Analytical Results

Sub-Matrix: **WATER**
5Matrix: **WATER(**

Compound	CAS Number	LOR	Unit	Client sample ID	EWBEy)3 W4	EWBEy)3 W6	EWBEy)3 W2	AFi)3 W48	AFi)3 W6P
				Client sampling date / time	23-Oct-2017 00:00	23-Oct-2017 00:00	23-Oct-2017 00:00	23-Oct-2017 00:00	19-Oct-2017 00:00
					E1 87446GG)008	E1 87446GG)004	E1 87446GG)006	E1 87446GG)002	E1 87446GG)00M
					Result	Result	Result	Result	Result
E9468A: 9errfgorol fk, f SgfroatQAQtdw									
9errfgorougrl ae wgfroatQl Qtd 59F1 S(	375-73-5	0.002	µg/L		**0'006**	<0.002	**0'00P**	<0.002	**0'04M**
9errfgorohearl ae wgfroatQl Qtd 59F9eS(	2706-91-4	0.002	µg/L		**0'006**	**0'004**	**0'002**	<0.002	**0'08G**
9errfgorosexl ae wgfroatQl Qtd 59FBxS(	355-46-4	0.002	µg/L		**0'087**	**0'00G**	**0'044**	**0'006**	**0'0- 2**
9errfgorosehrl ae wgfroatQl Qtd 59FBhS(	375-92-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	**0'00P**
9errfgorooQrl ae wgfroatQl Qtd 59FOS(	1763-23-1	0.002	µg/L		**0'047**	**0'086**	**0'026**	**0'006**	**0'0M4**
9errfgorodeQl ae wgfroatQl Qtd 59Fi S(	335-77-3	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E94681 : 9errfgorol fk, f Cl ruox, ftQAQtdw									
9errfgorougrl aotQl Qtd 59F1 A(	375-22-4	0.01	µg/L		<0.01	<0.01	**0'0P**	<0.01	<0.01
9errfgorohearl aotQl Qtd 59F9eA(	2706-90-3	0.002	µg/L		<0.002	<0.002	**0'42P**	<0.002	<0.002
9errfgorosexl aotQl Qtd 59FBxA(	307-24-4	0.002	µg/L		<0.002	**0'00M**	**0'8P-**	<0.002	**0'00M**
9errfgorosehrl aotQl Qtd 59FBhA(	375-85-9	0.002	µg/L		<0.002	<0.002	**0'0M-**	<0.002	<0.002
9errfgorooQrl aotQl Qtd 59FOA(	335-67-1	0.002	µg/L		<0.002	<0.002	**0'00G**	<0.002	**0'002**
9errfgoroaoal aotQl Qtd 59FNA(	375-95-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
9errfgorodeQl aotQl Qtd 59Fi A(	335-76-2	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
9errfgorogadeQl aotQl Qtd 59FUai A(	2058-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
9errfgorododeQl aotQl Qtd 59Fi oi A(	307-55-1	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
9errfgororrtdeQl aotQl Qtd 59FTri A(	72629-94-8	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
9errfgororerrl deQl aotQl Qtd 59FTei A(	376-06-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E9468C: 9errfgorol fk, f Sgfroal p tdew									
9errfgorooQrl ae wgfroal p tde 5FOSA(	754-91-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N)3 ers, f herrfgorooQrl ae wgfroal p tde 53 eFOSA(	31506-32-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N)Ers, f herrfgorooQrl ae wgfroal p tde 5ErFOSA(	4151-50-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER 5Matrix: WATER(				Client sample ID	EWBEy)3 W4	EWBEy)3 W6	EWBEy)3 W2	AFi)3 W48	AFi)3 W6P
				Client sampling date / time	23-Oct-2017 00:00	23-Oct-2017 00:00	23-Oct-2017 00:00	23-Oct-2017 00:00	19-Oct-2017 00:00
Compound	*CAS Number*	*LOR*	*Unit*		E1 87446GG)008	E1 87446GG)004	E1 87446GG)006	E1 87446GG)002	E1 87446GG)00M
					Result	Result	Result	Result	Result
E9468C: 9errfgorol fk, f Sgfroal p tdew) Coartaged									
N)3 ens, f herrfgorooQrl ae wgfroal p tdoersl aof 53 eFOSE(	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N)Ens, f herrfgorooQrl ae wgfroal p tdoersl aof 5ErFOSE(	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
N)3 ens, f herrfgorooQrl ae wgfroal p tdol QertQl Qtd 53 eFOSAA(	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
N)Ens, f herrfgorooQrl ae wgfroal p tdol QertQl Qtd 5ErFOSAA(	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	<0.002
E9468i : 5a:4(Ffgororefop er SgfroatQAQtdw									
2:4 Ffgororefop er wgfroatQl Qtd 52:4 FTS(	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
P:4 Ffgororefop er wgfroatQl Qtd 5P:4 FTS(	27619-97-2	0.005	µg/L		<0.005	<0.005	8^47	<0.005	<0.005
- :4 Ffgororefop er wgfroatQl Qtd 5- :4 FTS(	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
80:4 Ffgororefop er wgfroatQl Qtd 580:4 FTS(	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	<0.005
E94689: 9FAS Sgp w									
Sgp om9FAS	----	0.002	µg/L		0^0M0	0^04G	8^ G	0^00P	0^8GM
Sgp om9FBxS l ad 9FOS	355-46-4/1763-23-1	0.002	µg/L		0^022	0^044	0^0PM	0^00P	0^86P
Sgp om9FAS 5WA i ER Ltw(	----	0.002	µg/L		0^046	0^08P	8^ 2	0^006	0^867
E9468S: 9FAS Sgrrocl re									
86C2)9FOS	----	0.002	%		- 6^G	- 0^7	- 6^	G4^M	808
86C-)9FOA	----	0.002	%		G7^6	- 7^6	- - ^8	74^7	PP^G

Analytical Results

Sub-Matrix: WATER 5Matrix: WATER(			Client sample ID	y C808	ABEy)3 W4	ABEy)3 W6	ABEy)3 W2	))))
			Client sampling date / time	19-Oct-2017 00:00	20-Oct-2017 00:00	20-Oct-2017 00:00	20-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit	E1 87446GG)00P	E1 87446GG)007	E1 87446GG)00-	E1 87446GG)00G	)))))))
				Result	Result	Result	Result	----
E9468A: 9errfgorol fk, f SgfroatQAQtdw								
9errfgorougrl ae wgfroatQl Qtd 59F1 S(	375-73-5	0.002	µg/L	**0'042**	<0.002	<0.002	<0.002	))))
9errfgorohearl ae wgfroatQl Qtd 59F9eS(	2706-91-4	0.002	µg/L	**0'08-**	<0.002	**0'006**	**0'007**	))))
9errfgorosexl ae wgfroatQl Qtd 59FBxS(	355-46-4	0.002	µg/L	**0'07G**	**0'007**	**0'060**	**0'080**	))))
9errfgorosehrl ae wgfroatQl Qtd 59FBhS(	375-92-8	0.002	µg/L	**0'00P**	<0.002	<0.002	<0.002	))))
9errfgorooQrl ae wgfroatQl Qtd 59FOS(	1763-23-1	0.002	µg/L	**0'027**	**0'002**	**0'0PG**	**0'08G**	))))
9errfgorodeQl ae wgfroatQl Qtd 59Fi S(	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	))))
E94681 : 9errfgorol fk, f Cl ruox, ftQAQtdw								
9errfgorougrl aotQl Qtd 59F1 A(	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	))))
9errfgorohearl aotQl Qtd 59F9eA(	2706-90-3	0.002	µg/L	<0.002	<0.002	**0'00P**	**0'040**	))))
9errfgorosexl aotQl Qtd 59FBxA(	307-24-4	0.002	µg/L	**0'002**	<0.002	**0'084**	**0'08P**	))))
9errfgorosehrl aotQl Qtd 59FBhA(	375-85-9	0.002	µg/L	<0.002	<0.002	**0'002**	**0'007**	))))
9errfgorooQrl aotQl Qtd 59FOA(	335-67-1	0.002	µg/L	**0'002**	<0.002	**0'002**	<0.002	))))
9errfgoroaoal aotQl Qtd 59FNA(	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	))))
9errfgorodeQl aotQl Qtd 59Fi A(	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	))))
9errfgorogadeQl aotQl Qtd 59FUai A(	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	))))
9errfgorododeQl aotQl Qtd 59Fi oi A(	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	))))
9errfgorornrtdeQl aotQl Qtd 59FTri A(	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	))))
9errfgororenrl deQl aotQl Qtd 59FTei A(	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	))))
E9468C: 9errfgorol fk, f Sgfroal p tdew								
9errfgorooQrl ae wgfroal p tde 5FOSA(	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	))))
N)3 ens, f herrfgorooQrl ae wgfroal p tde 53 eFOSA(	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	))))
N)Ens, f herrfgorooQrl ae wgfroal p tde 5ErFOSA(	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	))))

Analytical Results

Sub-Matrix: WATER 5Matrix: WATER(				Client sample ID	y C808	ABEy)3 W4	ABEy)3 W6	ABEy)3 W2	))))
				Client sampling date / time	19-Oct-2017 00:00	20-Oct-2017 00:00	20-Oct-2017 00:00	20-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit		E1 87446GG)00P	E1 87446GG)007	E1 87446GG)00-	E1 87446GG)00G	)))))))
					Result	Result	Result	Result	----
E9468C: 9errfgorol fk, f Sgfroal p tdew) Coartaged									
N)3 ers, f herrfgorooQrl ae wgfroal p tdoersl aof 53 eFOSE(	24448-09-7	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	))))
N)Ers, f herrfgorooQrl ae wgfroal p tdoersl aof 5ErFOSE(	1691-99-2	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	))))
N)3 ers, f herrfgorooQrl ae wgfroal p tdol QertQl Qtd 53 eFOSAA(	2355-31-9	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	))))
N)Ers, f herrfgorooQrl ae wgfroal p tdol QertQl Qtd 5ErFOSAA(	2991-50-6	0.002	µg/L		<0.002	<0.002	<0.002	<0.002	))))
E9468i : 5a:4(Ffgororefop er SgfroatQAQtdw									
2:4 Ffgororefop er wgfroatQl Qtd 52:4 FTS(	757124-72-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	))))
P:4 Ffgororefop er wgfroatQl Qtd 5P:4 FTS(	27619-97-2	0.005	µg/L		<0.005	0'04G	<0.005	0'08P	))))
-:4 Ffgororefop er wgfroatQl Qtd 5-:4 FTS(	39108-34-4	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	))))
80:4 Ffgororefop er wgfroatQl Qtd 580:4 FTS(	120226-60-0	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	))))
E94689: 9FAS Sgp w									
Sgp om9FAS	----	0.002	µg/L		0'8-4	0'020	0'84-	0'0GM	))))
Sgp om9FBxS l ad 9FOS	355-46-4/1763-23-1	0.002	µg/L		0'84P	0'088	0'0GG	0'04G	))))
Sgp om9FAS 5WA i ER Ltw(	----	0.002	µg/L		0'84G	0'06P	0'0MG	0'07P	))))
E9468S: 9FAS Sgrrocl re									
86C2)9FOS	----	0.002	%		-7'4	G2'M	7M'7	882	))))
86C-)9FOA	----	0.002	%		PM0	P4'P	7P'7	GM6	))))

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
E9468S: 9FAS Sgrrocl re			
86C2)9FOS	----	60	120
86C-)9FOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1722399**	Page	: 1 of 7
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Contact	: Matt Frost
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 4724 0311	Telephone	: +61-7-3243 7222
Project	: 1780457	Date Samples Received	: 27-Oct-2017
Order number	: PO06133	Date Analysis Commenced	: 01-Nov-2017
C-O-C number	: ----	Issue Date	: 07-Nov-2017
Sampler	: ----		
Site	: GW - EWHEQ and AFD		
Quote number	: EN/002/16 v2		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Pabi Subba	Senior Organic Chemist	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1213087)									
ET1701440-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	0.543	0.622	13.6	0% - 20%
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	0.341	0.399	15.6	0% - 20%
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	2.84	2.87	1.05	0% - 20%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.077	0.074	3.97	0% - 20%
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	1.48	1.39	6.42	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1722399-009	AHEQ-MW4	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	0.007	0.008	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	0.010	0.009	0.00	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.019	0.018	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1213087)									
ET1701440-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.411	0.476	14.5	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1213087) - continued									
ET1701440-001	Anonymous	EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.022	0.023	6.71	0% - 50%
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.050	0.052	4.31	0% - 20%
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	0.07	0.11	40.1	0% - 50%
EB1722399-009	AHEQ-MW4	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.020	0.021	0.00	0% - 50%
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.016	0.016	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.007	0.008	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1213087)									
ET1701440-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1722399-009	AHEQ-MW4	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1213087) - continued									
EB1722399-009	AHEQ-MW4	EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1213087)									
ET1701440-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1722399-009	AHEQ-MW4	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	0.016	0.017	6.53	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1213087)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	97.6	50	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	115	50	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	115	50	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	117	50	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	110	50	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.05 µg/L	125	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1213087)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.25 µg/L	105	50	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	102	50	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	117	50	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	117	50	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	114	50	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	118	50	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	113	50	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	115	40	130
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	115	40	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	116	40	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	122	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1213087)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	116	40	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	114	40	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	111	40	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.125 µg/L	125	50	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	120	40	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	123	50	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	122	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1213087)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	117	50	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	118	50	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1213087) - continued								
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	116	50	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	123	50	130

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	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1213087)							
ET1701440-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	94.4	50	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	112	50	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	114	50	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	108	50	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	101	50	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.05 µg/L	110	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1213087)							
ET1701440-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.25 µg/L	107	30	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	120	50	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	122	50	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	120	50	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	118	50	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	116	50	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	114	50	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	111	30	130
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	114	30	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	112	30	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	117	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1213087)							
ET1701440-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	113	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	123	30	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	126	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.125 µg/L	125	30	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	118	30	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1213087) - continued							
ET1701440-002	Anonymous	EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	117	30	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	107	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1213087)							
ET1701440-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	118	50	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	128	50	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	121	50	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	125	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1722399**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Telephone	: +61-7-3243 7222
Project	: 1780457	Date Samples Received	: 27-Oct-2017
Site	: GW - EWHEQ and AFD	Issue Date	: 07-Nov-2017
Sampler	: ----	No. of samples received	: 9
Order number	: PO06133	No. of samples analysed	: 9

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL) AFD-MW36, QC101	**19-Oct-2017**	**01-Nov-2017**	17-Apr-2018	✓	**01-Nov-2017**	17-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL) AHEQ-MW2, AHEQ-MW3, AHEQ-MW4	**20-Oct-2017**	**01-Nov-2017**	18-Apr-2018	✓	**01-Nov-2017**	18-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL) EWHEQ-MW2, EWHEQ-MW3, EWHEQ-MW4, AFD-MW21	**23-Oct-2017**	**01-Nov-2017**	21-Apr-2018	✓	**01-Nov-2017**	21-Apr-2018	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL) AFD-MW36, QC101	**19-Oct-2017**	**01-Nov-2017**	17-Apr-2018	✓	**01-Nov-2017**	17-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL) AHEQ-MW2, AHEQ-MW3, AHEQ-MW4	**20-Oct-2017**	**01-Nov-2017**	18-Apr-2018	✓	**01-Nov-2017**	18-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL) EWHEQ-MW2, EWHEQ-MW3, EWHEQ-MW4, AFD-MW21	**23-Oct-2017**	**01-Nov-2017**	21-Apr-2018	✓	**01-Nov-2017**	21-Apr-2018	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-LL) AFD-MW36, QC101	**19-Oct-2017**	**01-Nov-2017**	17-Apr-2018	✓	**01-Nov-2017**	17-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL) AHEQ-MW2, AHEQ-MW3, AHEQ-MW4	**20-Oct-2017**	**01-Nov-2017**	18-Apr-2018	✓	**01-Nov-2017**	18-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL) EWHEQ-MW2, EWHEQ-MW3, EWHEQ-MW4, AFD-MW21	**23-Oct-2017**	**01-Nov-2017**	21-Apr-2018	✓	**01-Nov-2017**	21-Apr-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AFD-MW36,	QC101	**19-Oct-2017**	**01-Nov-2017**	17-Apr-2018	✓	**01-Nov-2017**	17-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL)								
AHEQ-MW2, AHEQ-MW4	AHEQ-MW3,	**20-Oct-2017**	**01-Nov-2017**	18-Apr-2018	✓	**01-Nov-2017**	18-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL)								
EWHEQ-MW2, EWHEQ-MW4,	EWHEQ-MW3, AFD-MW21	**23-Oct-2017**	**01-Nov-2017**	21-Apr-2018	✓	**01-Nov-2017**	21-Apr-2018	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
AFD-MW36,	QC101	**19-Oct-2017**	**01-Nov-2017**	17-Apr-2018	✓	**01-Nov-2017**	17-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL)								
AHEQ-MW2, AHEQ-MW4	AHEQ-MW3,	**20-Oct-2017**	**01-Nov-2017**	18-Apr-2018	✓	**01-Nov-2017**	18-Apr-2018	✓
HDPE (no PTFE) (EP231X-LL)								
EWHEQ-MW2, EWHEQ-MW4,	EWHEQ-MW3, AFD-MW21	**23-Oct-2017**	**01-Nov-2017**	21-Apr-2018	✓	**01-Nov-2017**	21-Apr-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet 1 of 1

Project No:	1780457	Phase:		Lab Name:	ALS - Brisbane
Site ID No.:		Site Location:	GW - EWHEQ and AFD	Quote No.	EN/002/16V2
Sampled By:				Order No.:	PO06133
Turnaround Time	24hrs ☐	48hrs ☐	Standard ■		Stafford QLD 4053 AUSTRALIA
	3days ☐	5 Days ☐	Date Required By:		
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ■	BULLETIN BOARD ☐
Report Format	PDF ■	EXCEL ■	ESDAT ■	ENVIROSYS ■	

GOLDER ASSOCIATES PTY LTD
Phone: 07 46548200
Fax: 07 46548201
Project Manager: Tom Dean
Reviewed:
Sub Contact: Lenga Corrick
Phone: 0487213487 Email: lcorrick@golder.com.au, eqmail@golder.com.au

Golder Associatess

ANALYSIS REQUIRED

Comments/Special Instructions:

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite Low Level (24 Analytes) (EP231X-LL)	Comments
1	EWHEQ- MW2		25-10-17		W			X	
2	EWHEQ- MW3		"		W			X	
3	EWHEQ- MW4		"		W			X	
4	AFD- ~~MW3~~ MW2		25.10.17		W			X	
5 4	AFD- MW3		19.10.17		W			X	
6	QC101		19.10.17		W			X	
7 5	AHEQ-MW2		20.10.17		W				
8 6	AHEQ-MW3		20.10.17		W				
9 7	AHEQ-MW4		20.10.17		W				

SAMPLE MATRIX – Soil/Sediment/Fill/Water/Other
SAMPLE TYPE – Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)
HIGH CONCENTRATION: circle expected parameters in this list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GA	26.10.17	0900
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY	John B		27/10	9:46	

To Be Filled Out By Analysing Laboratory — LAB. BATCH No.:

Security Seal		Chilled	
Suitable Containers		5 room	
Lod Det		Ambient	

Environmental Division
Brisbane
Work Order Reference
EB1722399

Telephone : + 61-7-3243 7222

FL3
SMT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1722399**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS EMMA CORNISH	Contact	: Matt Frost
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: ecornish@golder.com.au	E-mail	: matt.frost@alsglobal.com
Telephone	: +61 07 4724 0311	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 1780457	Page	: 1 of 2
Order number	: PO06133	Quote number	: ES2016GOLASS0005 (EN/002/16 v2)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: GW - EWHEQ and AFD		
Sampler	:		

Dates

Date Samples Received	: 27-Oct-2017 09:40	Issue Date	: 27-Oct-2017
Client Requested Due Date	: 03-Nov-2017	Scheduled Reporting Date	: **03-Nov-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 25.5°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 9 / 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

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	*Client sampling date / time*	*Client sample ID*	WATER - EP231X-LL PFAS - Full Suite Low Level (28 analytes)
EB1722399-001	23-Oct-2017 00:00	EWHEQ-MW2	✓
EB1722399-002	23-Oct-2017 00:00	EWHEQ-MW3	✓
EB1722399-003	23-Oct-2017 00:00	EWHEQ-MW4	✓
EB1722399-004	23-Oct-2017 00:00	AFD-MW21	✓
EB1722399-005	19-Oct-2017 00:00	AFD-MW36	✓
EB1722399-006	19-Oct-2017 00:00	QC101	✓
EB1722399-007	20-Oct-2017 00:00	AHEQ-MW2	✓
EB1722399-008	20-Oct-2017 00:00	AHEQ-MW3	✓
EB1722399-009	20-Oct-2017 00:00	AHEQ-MW4	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE (au)

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

IWAN OWEN

- *AU Certificate of Analysis - NATA (COA)	Email	iowen@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	iowen@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	iowen@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	iowen@golder.com.au
- Chain of Custody (CoC) (COC)	Email	iowen@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	iowen@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	iowen@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	iowen@golder.com.au

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Iwan Owen**

Report **570280-W**
Project name GW - EWHEQ AND AFD
Project ID 1780457
Received Date Oct 31, 2017

Client Sample ID			**QC201**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**B17-Oc35217**
Date Sampled			**Oct 19, 2017**
Test/Reference	LOR	Unit	
PFASs Summations			
Sum (PFHxS + PFOS)	0.01	ug/L	0.14
Sum of US EPA PFAS (PFOS + PFOA)	0.01	ug/L	0.06
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	0.01	ug/L	0.14
Sum of WA DER PFAS (n=10)	0.05	ug/L	0.16
Sum of PFASs (n=28)	0.1	ug/L	0.18
Perfluoroalkyl carboxylic acids (PFCAs) - 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
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01
Perfluoroundecanoic acid (PFUnA)[N11]	0.01	ug/L	< 0.01
Perfluorododecanoic acid (PFDoA)[N11]	0.01	ug/L	< 0.01
Perfluorotridecanoic acid (PFTrDA)	0.01	ug/L	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01
13C4-PFBA (surr.)	1	%	67
13C5-PFPeA (surr.)	1	%	104
13C5-PFHxA (surr.)	1	%	131
13C4-PFHpA (surr.)	1	%	101
13C8-PFOA (surr.)	1	%	105
13C5-PFNA (surr.)	1	%	119
13C6-PFDA (surr.)	1	%	148
13C2-PFUnDA (surr.)	1	%	128
13C2-PFDoDA (surr.)	1	%	129
13C2-PFTeDA (surr.)	1	%	111
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) -			
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	[N09]0.02
Perfluoropentanesulfonic acid (PFPeS)	0.01	ug/L	[N09]0.02
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]0.08
Perfluoroheptanesulfonic acid (PFHpS)	0.01	ug/L	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.06
Perfluorodecanesulfonic acid (PFDS)	0.01	ug/L	< 0.01
13C3-PFBS (surr.)	1	%	127

Client Sample ID			QC201
Sample Matrix			Water
Eurofins | mgt Sample No.			B17-Oc35217
Date Sampled			Oct 19, 2017
Test/Reference	LOR	Unit	
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) -			
18O2-PFHxS (surr.)	1	%	101
13C8-PFOS (surr.)	1	%	135
Perfluoroalkane sulfonamides (PFASAs) - 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	%	160
D3-N-MeFOSA (surr.)	1	%	118
D5-N-EtFOSA (surr.)	1	%	57
D7-N-MeFOSE (surr.)	1	%	129
D9-N-EtFOSE (surr.)	1	%	128
D5-N-EtFOSAA (surr.)	1	%	140
D3-N-MeFOSAA (surr.)	1	%	125
n:2 Fluorotelomer sulfonic acids - Trace			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)[N11]	0.05	ug/L	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)[N11]	0.01	ug/L	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	0.01	ug/L	< 0.01
13C2-4:2 FTS (surr.)	1	%	170
13C2-6:2 FTS (surr.)	1	%	148
13C2-8:2 FTS (surr.)	1	%	152

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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 Polyfluorinated Alkyl Substances (PFASs) - Trace			
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	Brisbane	Oct 31, 2017	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace	Brisbane	Oct 31, 2017	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
Perfluoroalkane sulfonamides (PFASAs) - Trace	Brisbane	Oct 31, 2017	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
n:2 Fluorotelomer sulfonic acids - Trace	Brisbane	Oct 31, 2017	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			

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NATA # 1261 Site # 20794

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

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	PO0164	**Received:**	Oct 31, 2017 3:02 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	570280	**Due:**	Nov 7, 2017
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Iwan Owen
Project Name:	GW - EWHEQ AND AFD				
Project ID:	1780457				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluorinated Alkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC201	Oct 19, 2017		Water	B17-Oc35217	X
Test Counts						1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota 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. 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 Sample Receipt Advice.

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.

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

Units

mg/kg: milligrams per kilogram

ug/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

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

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

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	Quality Systems Manual ver 5.1 US Department of Defense
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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. 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) - 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 (PFUnA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoA)	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							
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkane sulfonamides (PFASAs) - 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 - Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs) - Trace							
Perfluorobutanoic acid (PFBA)	%	120			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	113			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	93			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	111			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	119			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	110			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	91			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	%	100			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	%	84			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	67			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	108			50-150	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace							
Perfluorobutanesulfonic acid (PFBS)	%	78			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	93			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	93			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	125			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	99			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	101			50-150	Pass	
LCS - % Recovery							
Perfluoroalkane sulfonamides (PFASAs) - Trace							
Perfluorooctane sulfonamide (FOSA)	%	92			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	109			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	103			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	99			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	106			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	95			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	101			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids - Trace							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	120			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	%	88			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	%	116			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1					
Perfluorobutanoic acid (PFBA)	M17-Oc34102	NCP	%	114			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M17-Oc34102	NCP	%	111			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M17-Oc34102	NCP	%	99			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M17-Oc34102	NCP	%	110			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M17-Oc34102	NCP	%	116			50-150	Pass	
Perfluorononanoic acid (PFNA)	M17-Oc34102	NCP	%	111			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M17-Oc34102	NCP	%	87			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	M17-Oc34102	NCP	%	97			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	M17-Oc34102	NCP	%	78			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M17-Oc34102	NCP	%	74			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M17-Oc34102	NCP	%	96			50-150	Pass	
Spike - % Recovery									
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M17-Oc34102	NCP	%	81			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M17-Oc34102	NCP	%	90			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M17-Oc34102	NCP	%	92			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M17-Oc34102	NCP	%	108			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M17-Oc34102	NCP	%	90			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M17-Oc34102	NCP	%	102			50-150	Pass	
Spike - % Recovery									
Perfluoroalkane sulfonamides (PFASAs) - Trace				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctane sulfonamide (FOSA)	M17-Oc34102	NCP	%	94			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M17-Oc34102	NCP	%	91			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M17-Oc34102	NCP	%	81			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M17-Oc34102	NCP	%	90			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M17-Oc34102	NCP	%	89			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M17-Oc34102	NCP	%	93			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M17-Oc34102	NCP	%	89			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids - Trace				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M17-Oc34102	NCP	%	94			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M17-Oc34102	NCP	%	109			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M17-Oc34102	NCP	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	M17-Oc34102	NCP	%	94			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs) - Trace				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Perfluoroalkane sulfonic acids & Perfluoroalkane sulfonates (PFSAs) - Trace				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkane sulfonamides (PFASAs) - Trace				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids - Trace				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M17-Oc34127	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTS)	M17-Oc34127	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Quality Control Analyte Summary Compliance

The table below is the actual occurrence of QC performed on the batch of samples within this report and as defined below

Analysis	Samples Analysed	Laboratory Duplicates Reported	Laboratory Matrix Spikes Reported	Method Blanks Reported	Laboratory Control Samples Reported
Perfluoroalkyl carboxylic acids (PFCAs) - Trace	1	1	1	1	1
Perfluoroalkane sulfonic acids & Perfluoroalkane	1	1	1	1	1
Perfluoroalkane sulfonamides (PFASAs) - Trace	1	1	1	1	1
n:2 Fluorotelomer sulfonic acids - Trace	1	1	1	1	1

Quality Control Parameter Frequency Compliance follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure April 2011, Schedule B3, Guideline on Laboratory Analysis of Potentially Contaminated Soils and US EPA SW-846 Chapter 1: 'Quality Control'.

It comprises the following when a laboratory process batch is deemed to consist of up to 20 samples that are similar in terms of matrix and test procedure, and are processed as one unit for QC purposes. If more than 20 samples are being processed, they are considered as more than one batch.

Method blank

One method blank per process batch.

Laboratory duplicate

There should be at least one duplicate per process batch, or two duplicates if the process batch exceeds 10 samples.

Laboratory control sample (LCS)

There should be at least one LCS per process batch.

Matrix spikes

There should be one matrix spike per matrix type per process batch.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Comments

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds. 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

Ryan Gilbert	Analytical Services Manager
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson

National Operations 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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SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet..... of.....

Project No:	1780457	Phase:		Lab Name:	Eurofins - Brisbane
Site ID No.:		Site Location:	GW - EWHEQ and AFD	Quote No.	#160715Q
Sampled By:		Emma Comish		Order No.:	PO0164
Turnaround Time	24hrs ☐	48hrs ☐	Standard ☒	Address: 1/21 Smallwood Place MURARRIE QLD 4172	
	36hrs ☐	5 Days ☐	Date Required By:		
Delivery Option	HARD ☐	FAX ☐	DISK ☐	EMAIL ☒	BULLETIN BOARD ☐
Report Format	PDF ☒	EXCEL ☒		ESDAT ☒	

GOLDER ASSOCIATES PTY LTD
216 Draper St, Cairns, 4870
Phone: 07 40548200
Fax: 07 40548201

Project Manager: Ivan Owen
Reviewed:
Job Contact: Emma Comish
Phone: 0407334931 Email: eowen@golder.com.au; ecomish@golder.com.au

Golder Associates

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)					PFAS - Full Suite Low Level (28 Analytes) (EP231X-LL)										Comments
	QC201		19-10-17		W							X										

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other

SAMPLE TYPE = Composite(C) Discrete(DC) Disturbed(DS) Core(CR), Grab Sample (GS)

HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GA	25-10-17	0900
RECEIVED BY	K Brogan	Eurofins	31.10.17	3:02
RELEASED BY				25.8
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref
RECEIVED BY					

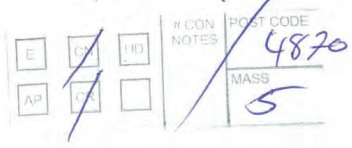
To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

R1.3
SNT004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

9800 4030 6341



3:02PM

28.8
29.2
28.4
28.80°C

Krystel Bryant
31/10/17

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**	PO0164	**Received:**	Oct 31, 2017 3:02 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	570280	**Due:**	Nov 7, 2017
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Iwan Owen
Project Name:	GW - EWHEQ AND AFD				
Project ID:	1780457				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Per- and Polyfluorinated Alkyl Substances (PFASs) - Trace
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						X
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC201	Oct 19, 2017		Water	B17-Oc35217	X
Test Counts						1

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ESB171282**	Page	: 1 of 7
Client	: **9 OLmER ASSOCIATES**	Laboratory	: Environmental Division Bycney
ContaM	: S A GR NI HR EI	ContaM	: Customer BerviMes EB
Nccress	: P H FHd 1X34 S 0THI QLD, NUBTANL0N 4064	Nccress	: 2XXh257 R oocpar+ Aoac Bmit- fielc I BR Nustralia 2164
Telep- one	: j 61 0X 4084 5200	Telep- one	: j 61h2h6X54 5888
Pro9eM	: 1X5048X	Date Bamples AeMeivec	: 02H ovh201X 12:06
Hrcer number	: PH06133	Date Nnalysis CommenMec	: 03H ovh201X
CHHC number	: hhh	Gsue Date	: 10H ovh201X 15:22
Bampler	: ES S N CHAI GBG		
Bite	: hhh		
Quote number	: EI W02W6 v2		
I o. of samples reMeivec	: 10		
I o. of samples analysec	: 10		

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

T- is report superseces any previous report/s( ) it- t- is referenMe. Aesults apply to t- e sample/s(as submittec. T- is coMument s- all not be reprocuMec, ewMept in full.

T- is CertifiMate of Nnalysis Montains t- e follo) ing information:

- x eneral Comments
- NnalytiMal Aesults
- Burrogate Control Limits

Addnro3GD r8iora Gtro3 lertr8e3t to tf rp rel ort hnD se iow3d r8 tf e ioDDhr8b pel GrGte GttGuf a e3tp: g wGDtc Co3troD Rel ortQ g AygC Coa l DG3ue Appeppa e3t to Gpprpt hrtf g wGDtc Re, reh G3d SGa l De Reuerl t NotrinuGtro3/

Signatories

T- is coMument - as been eleMroniMally signec by t- e aut- orizec signatories belo) . EleMroniMsigning is Marriec out in MomplianMe) it- proMecures speMfiec in 21 CkA Part 11.

Signatories	*Position*	*Accreditation Category*
NlewAossi	HrganiMC- emist	Bycney HrganiMs, Bmit- fielc, I BR
Aaymonc Commocore	Gstrument C- emist	Bycney GorganiMs, Bmit- fielc, I BR

General Comments

T- e analytiMal proMecures usec by t- e Environmental Division - ave been cevelopec from establis- ec internationally reMognizec proMecures suM as t- ose publis- ec by t- e UBEPN, NPGN, NB anc I EPS. Qn - ouse cevelopec proMecures are employec in t- e absenMe of coMumentec stancarcs or by MIent request.

R - ere moisture cetermination - as been performec, results are reportec on a cry) eig- t basis.

R - ere a reportec less t- an /<(result is - ig- er t- an t- e LHA, t- is may be cue to primary sample ewtraMWMigestate cilution ancWr insuffiMent sample for analysis.

R - ere t- e LHA of a reportec result ciffers from stancarc LHA, t- is may be cue to - ig- moisture Montent, insuffiMent sample /recuMec) eig- t employec(or matriwinterferenMe.

R - en sampling time information is not provicec by t- e MIent, sampling cates are s- o) n) it- out a time Momponent. Qn t- ese instanMes, t- e time Momponent - as been assumec by t- e laboratory for proMessing purposes.

R - ere a result is requirec to meet MomplianMe limits t- e assoMatec unMertainty must be Monsicerec. Aefer to t- e NLB ContaM for cetails.

Key : CNB I umber = CNB registry number from catabase maintainec by C- emiMal NbstraMs BerviMes. T- e C- emiMal NbstraMs BerviMe is a civision of t- e NmeriMan C- emiMal BoMety.
LHA = Limit of reporting
v = T- is result is Momputec from incivicual analyte ceteMions at or above t- e level of reporting
ø = NLB is not I NTN aMMecitec for t- ese tests.
~ = QciMates an estimatec value.

- EP231dHLL: Poor surrogate reMovery cue to matriwinterferenMes.
- EP231dHLL: PartiMular samples requirec cilution cue to t- e presenMe of - ig- level Montaminants. LHA values - ave been ac9ustec aMMorcingly.
- EP231d/THP(: PartiMular samples requirec cilution prior to ewtraMion cue to matriwinterferenMes. LHA values - ave been ac9ustec aMMorcingly.

Analytical Results

BubtS atriw: ml WATER LEAC0 ATE 4S atriw: WATER)				Client sample ID	A^.SS58 5.5/B	A0 Eg .SSB7 5.5/B	FR.SS5M 5.5/B	EW0 Eg .SSB(5.5/B	FR.T^B7 5/B.5/7
				Client sampling date / time	15fHMfr201X 00:00	17fHMfr201X 00:00	15fHMfr201X 00:00	17fHMfr201X 00:00	15fHMfr201X 00:00
Compound	*CAS Number*	*LOR*	*Unit*		ESB171282.557	ESB171282.552	ESB171282.55(	ESB171282.551	ESB171282.5B5
					Aesult	Aesult	Aesult	Aesult	Aesult
E^78BA: ^eriDvoroGDkcDSwDo3nu Aurdp									
^eriDvoroswtG3e pwDo3nu Gurd 4^F- S)	3X8fX3f8	0.002	µgW	<0.002	<0.002	<0.002	<0.002	**5/578**
^eriDvorol e3tG3e pwDo3nu Gurd 4^F^eS)	2X06f71f4	0.002	µgW	<0.002	<0.002	**5/5B5**	<0.002	**5/585**
^eriDvorof eHG3e pwDo3nu Gurd 4^F0 HS)	388f46f4	0.002	µgW	**5/55M**	**5/558**	**5/BB8**	**5/52B**	**5/UP7**
^eriDvorof el tG3e pwDo3nu Gurd 4^F0 I S)	3X8f72f5	0.002	µgW	<0.002	<0.002	**5/55M**	**5/558**	**5/7BU**
^eriDvoroutG3e pwDo3nu Gurd 4^FOS)	1X63f23f1	0.002	µgW	**5/B18**	**5/5U8**	**5/22M**	**5/5(U**	**BP8**
^eriDvorodeuG3e pwDo3nu Gurd 4^FmS)	338fXXf8	0.002	µgW	<0.002	<0.002	<0.002	<0.002	**5/5B2**
E^78B- : ^eriDvoroGDkcDCGrsoHcDu Aurdp									
^eriDvoroswtG3oru Gurd 4^F- A)	3X8f22f4	0.01	µgW	<0.01	<0.01	<0.01	<0.01	<0.01
^eriDvorol e3tG3oru Gurd 4^F^eA)	2X06f70f3	0.002	µgW	<0.002	**5/575**	<0.002	**5/BMP**	**5/5U5**
^eriDvorof eHG3oru Gurd 4^F0 HA)	30Xf24f4	0.002	µgW	<0.002	**5/5P5**	**5/5B(**	**5/755**	**5/7(B**
^eriDvorof el tG3oru Gurd 4^F0 I A)	3X8f58f7	0.002	µgW	<0.002	**5/5B7**	**5/551**	**5/58P**	**5/B5U**
^eriDvoroutG3oru Gurd 4^FOA)	338f6Xf1	0.002	µgW	**5/558**	**5/55M**	**5/575**	**5/5BM**	**5/8U8**
^eriDvoro3o3G3oru Gurd 4^FNA)	3X8f78f1	0.002	µgW	<0.002	**5/558**	**5/551**	<0.002	**5/B55**
^eriDvorodeuG3oru Gurd 4^FmA)	338fX6f2	0.002	µgW	<0.002	**5/558**	<0.002	**5/558**	**5/58U**
^eriDvorow3deuG3oru Gurd 4^F_3mA)	2085f74f5	0.002	µgW	<0.002	<0.002	<0.002	<0.002	<0.010
^eriDvorododeuG3oru Gurd 4^FmomA)	30Xf88f1	0.002	µgW	<0.002	<0.002	<0.002	<0.002	<0.010
^eriDvorotrndeuG3oru Gurd 4^FTrmA)	X2627f74f5	0.002	µgW	<0.002	<0.002	<0.002	<0.002	<0.010
^eriDvorotetrGdeuG3oru Gurd 4^FTemA)	3X6f06fX	0.008	µgW	<0.008	<0.008	<0.008	<0.008	<0.028
E^78BC: ^eriDvoroGDkcDSwDo3Ga rdep									
^eriDvoroutG3e pwDo3Ga rde 4FOSA)	X84f71f6	0.002	µgW	<0.002	<0.002	<0.002	<0.002	**5/5P1**
N.x etf cDl eriDvoroutG3e pwDo3Ga rde 4x eFOSA)	31806f82f5	0.008	µgW	<0.008	<0.008	<0.008	<0.008	<0.028
N.Etf cDl eriDvoroutG3e pwDo3Ga rde 4EtFOSA)	4181f80f2	0.008	µgW	<0.008	<0.008	<0.008	<0.008	<0.028

Analytical Results

BubtS atriw: ml WATER LEAC0 ATE 4S atriw: WATER)				Client sample ID	A^.SS58 5.5/B	A0 Eg .SSB7 5.5/B	FR.SS5M 5.5/B	EW0 Eg .SSB(5.5/B	FR.T^B7 5/B.5/7
				Client sampling date / time	15fHMf201X 00:00	17fHMf201X 00:00	15fHMf201X 00:00	17fHMf201X 00:00	15fHMf201X 00:00
Compound	CAS Number	LOR	Unit		ESB171282.557	ESB171282.552	ESB171282.55(	ESB171282.551	ESB171282.5B5
					Aesult	Aesult	Aesult	Aesult	Aesult
E^78BC: ^eriDvoroGDkcDSwDo3Ga rndep . Co3tr8wed									
N.x etf cDI eriDvoroutG3e pwDo3Ga rdoetf G3oD4k eFOSE)	24445f07fX	0.008	µgW	<0.008	<0.008	<0.008	<0.008	<0.028
N.Etf cDI eriDvoroutG3e pwDo3Ga rdoetf G3oD4EtFOSE)	1671f77f2	0.008	µgW	<0.008	<0.008	<0.008	<0.008	<0.028
N.x etf cDI eriDvoroutG3e pwDo3Ga rdoGuetru Gurd 4x eFOSAA)	2388f31f7	0.002	µgW	<0.002	<0.002	<0.002	<0.002	<0.010
N.Etf cDI eriDvoroutG3e pwDo3Ga rdoGuetru Gurd 4EtFOSAA)	2771f80f6	0.002	µgW	<0.002	<0.002	<0.002	<0.002	<0.010
E^78Bmt 43:7) FDvoroteDa er SwDo3ru Aurdp									
2:7 FDvoroteDa er pwDo3ru Gurd 42:7 FTS)	X8X124fX2f4	0.008	µgW	<0.008	<0.008	<0.008	<0.008	<0.010
(:7 FDvoroteDa er pwDo3ru Gurd 4(:7 FTS)	2X617f7Xf2	0.008	µgW	<0.008	5/2B8	<0.008	B/17	5/PUB
M7 FDvoroteDa er pwDo3ru Gurd 4M7 FTS)	37105f84f4	0.008	µgW	<0.008	5/5MI	<0.008	5/BB2	5/5MI
B5:7 FDvoroteDa er pwDo3ru Gurd 4B5:7 FTS)	120226f60f0	0.008	µgW	<0.008	5/551	<0.008	<0.008	<0.010
E^78B^: ^FAS Swa p									
Swa oi ^FAS	ffffh	0.002	µgW	5/BM2	5/(UU	5/(7U	7/8U	BP(
Swa oi ^F0 HS G3d ^FOS	388f46f4WX63f23h1	0.002	µgW	5/BMB	5/5U(	5/P(B	5/BB5	BP2
Swa oi ^FAS 4WA mER Lrpt)	ffffh	0.002	µgW	5/5BB	5/PU8	5/B((	7/8B	7/P2
E^78BS: ^FAS SwrrobGte									
B8C2.^FOS	ffffh	0.002	%	18/1	18/(	U5/8	MI/1	M(/5
B8CM^FOA	ffffh	0.002	%	1(/(	(MU	P(/(	(8/7	(U/5

Analytical Results

BubtS atriw: SOIL 4S atriw: SOIL)			Client sample ID	A^.SS57 5.5/B	A^.SS58 5.5/B	A0 Eg .SSBP 5.5/B	A0 Eg .SSB7 5.5/B	EW0 Eg .SSBU 5.5/B
			Client sampling date / time	15fHMfl201X 00:00	15fHMfl201X 00:00	17fHMfl201X 00:00	17fHMfl201X 00:00	17fHMfl201X 00:00
Compound	CAS Number	LOR	Unit	ESB171282.55B	ESB171282.557	ESB171282.558	ESB171282.552	ESB171282.55P
				Aesult	Aesult	Aesult	Aesult	Aesult
EA5PP: x orptwre Co3te3t 4mrred 6 B5P.BB5@)								
x orptwre Co3te3t	ttth	1.0	%	7/7	....	B/P	....	1B/5
EN(5: - ottD LeGuf r8b ^rouedwre								
Fr8GDI 0	ttth	0.1	pG Unit	....	1/7	....	1/P	....
E^78B°TO^°A: ^eriDvoroGDkcDSwDo3ru Aurdp								
^eriDvoroswtG3e pwDo3ru Gurd 4^F- S)	3X8hX3h8	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
^eriDvorol e3tG3e pwDo3ru Gurd 4^F^eS)	2X06h71h4	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
^eriDvorof eHG3e pwDo3ru Gurd 4^F0 HS)	388h46h4	0.0002	mgWg	<0.0002	....	5/555(	....	<0.0080
^eriDvorof el tG3e pwDo3ru Gurd 4^F0 I S)	3X8h72h5	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
^eriDvoroout G3e pwDo3ru Gurd 4^FOS)	1X63h23h1	0.0002	mgWg	5/55B8	....	5/55B2	....	5/58P8
^eriDvorodeuG3e pwDo3ru Gurd 4^FmS)	338hXXh8	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
E^78B°TO^°-:^eriDvoroGDkcDCGrsoHcDu Aurdp								
^eriDvoroswtG3oru Gurd 4^F- A)	3X8h22h4	0.001	mgWg	<0.001	....	<0.001	....	<0.008
^eriDvorol e3tG3oru Gurd 4^F^eA)	2X06h70h8	0.0002	mgWg	<0.0002	....	5/55BM	....	5/BBB
^eriDvorof eHG3oru Gurd 4^F0 HA)	30Xh24h4	0.0002	mgWg	<0.0002	....	5/55B2	....	5/5125
^eriDvorof el tG3oru Gurd 4^F0 I A)	3X8h58h7	0.0002	mgWg	<0.0002	....	5/555(	....	5/5P82
^eriDvoroout G3oru Gurd 4^FOA)	338h6Xh1	0.0002	mgWg	<0.0002	....	5/555P	....	5/57(1
^eriDvoro3o3G3oru Gurd 4^FNA)	3X8h78h1	0.0002	mgWg	<0.0002	....	5/5558	....	5/5787
^eriDvorodeuG3oru Gurd 4^FmA)	338hX6h2	0.0002	mgWg	<0.0002	....	<0.0002	....	5/5B(2
^eriDvorow3deuG3oru Gurd 4^F_3mA)	2085h74h5	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
^eriDvorododeuG3oru Gurd 4^FmomA)	30Xh88h1	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
^eriDvorotrrdeuG3oru Gurd 4^FTrmA)	X2627h74h5	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
^eriDvorotetrGdeuG3oru Gurd 4^FTemA)	3X6h06hX	0.0008	mgWg	<0.0008	....	<0.0006	....	<0.0128
E^78B°TO^°C: ^eriDvoroGDkcDSwDo3Ga rtdep								
^eriDvoroout G3e pwDo3Ga rtde 4FOSA)	X84h71h6	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080

Analytical Results

BubtS atriw: SOIL 4S atriw: SOIL)			Client sample ID	A^.SS57 5.5/B	A^.SS58 5.5/B	A0 Eg .SSBP 5.5/B	A0 Eg .SSB7 5.5/B	EW0 Eg .SSBU 5.5/B
			Client sampling date / time	15rHMr201X 00:00	15rHMr201X 00:00	17rHMr201X 00:00	17rHMr201X 00:00	17rHMr201X 00:00
Compound	CAS Number	LOR	Unit	ESB171282.55B	ESB171282.557	ESB171282.558	ESB171282.552	ESB171282.55P
				Aesult	Aesult	Aesult	Aesult	Aesult
E^78B° TO^° C: ^eriDvoroGIkcDSwDo3Ga rtdep . Co3tr8wed								
N.x etf cDl eriDvoroutG3e pwDo3Ga rtde 4x eFOSA)	31806r32r5	0.0008	mgWg	<0.0008	....	<0.0006	....	<0.0128
N.Etf cDl eriDvoroutG3e pwDo3Ga rtde 4EtFOSA)	4181r80r2	0.0008	mgWg	<0.0008	....	<0.0006	....	<0.0128
N.x etf cDl eriDvoroutG3e pwDo3Ga rtdoetf G3oD4x eFOSE)	24445r07rX	0.0008	mgWg	<0.0008	....	<0.0006	....	<0.0128
N.Etf cDl eriDvoroutG3e pwDo3Ga rtdoetf G3oD4EtFOSE)	1671r77r2	0.0008	mgWg	<0.0008	....	<0.0006	....	<0.0128
N.x etf cDl eriDvoroutG3e pwDo3Ga rtdoGuetnu Gurd 4x eFOSAA)	2388r81r7	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
N.Etf cDl eriDvoroutG3e pwDo3Ga rtdoGuetnu Gurd 4EtFOSAA)	2771r80r6	0.0002	mgWg	<0.0002	....	<0.0002	....	<0.0080
E^78B° TO^° m: 43:7) FDvoroteDa er SwDo3nu Aurdp								
2:7 FDvoroteDa er pwDo3nu Gurd 42:7 FTS)	X8X124rX2r4	0.0008	mgWg	<0.0008	....	<0.0008	....	<0.0080
(:7 FDvoroteDa er pwDo3nu Gurd 4(:7 FTS)	2X617r7Xr2	0.0008	mgWg	<0.0008	....	<0.0008	....	<0.0080
M7 FDvoroteDa er pwDo3nu Gurd 4M7 FTS)	37105r84r4	0.0008	mgWg	<0.0008	....	<0.0008	....	<0.0080
B5:7 FDvoroteDa er pwDo3nu Gurd 4B5:7 FTS)	120226r60r0	0.0008	mgWg	<0.0008	....	<0.0008	....	<0.0080
E^78B° TO^° ^: ^FAS Swa p								
Swa oi ^FAS	ttth	0.0002	mgWg	5/55B8	....	5/55((	....	5/825
Swa oi ^F0 HS G3d ^FOS	388r46r4rWX63r23h 1	0.0002	mgWg	5/55B8	....	5/5575	....	5/58P8
Swa oi TO^ C2 . CB2 CGrsoHcDBtep G3d C2 . CMSwDo3Gtep	ttth	0.0002	mgWg	5/55B8	....	5/55((	....	5/825
E^78B° TO^° S: ^FAS SwrrobGte								
B8C2.^FOS	ttth	0.0002	%	MMP	....	BB5	....	U5/5
B8CM^FOA	ttth	0.0002	%	MMP	....	B55	....	(5/5

Page : X of 7
R or+ Hrcer : EB1X2X434
Client : x HLDEA NBBHC0NTEB
Pro2M : 1X5048X

Analytical Results

BubtS atriw: SOIL 4S atriw: SOIL)			Client sample ID	FR.SS5M 5.5/B	EW0 Eg.SSB(5.5/B	FR.SSB5 5.5/B	FR.T^B7 5/2.5/P	FR.T^B7 5/B.5/7
			Client sampling date / time	15fHMfl201X 00:00	17fHMfl201X 00:00	15fHMfl201X 00:00	15fHMfl201X 00:00	15fHMfl201X 00:00
Compound	CAS Number	LOR	Unit	ESB171282.55(	ESB171282.551	ESB171282.55M	ESB171282.55U	ESB171282.5B5
				Aesult	Aesult	Aesult	Aesult	Aesult
EA5PP: x orptwre Co3te3t 4mrred 6 B5P.BB5@)								
x orptwre Co3te3t	ttth	1.0	%	....	....	1/P	1/5	....
EN(5: - ottD LeGuf r8b ^rouedwre								
Fr8GDI 0	ttth	0.1	pG Unit	1/7	1/1	....	....	1/U
E^78B°TO^°A: ^eriDvoroGDkcDSwDo3ru Aurdp								
^eriDvoroswtG3e pwDo3ru Gurd 4^F- S)	3X8hX3h8	0.0002	mgWg	....	....	<0.0280	5/585(	....
^eriDvorol e3tG3e pwDo3ru Gurd 4^F^eS)	2X06h71h4	0.0002	mgWg	....	....	<0.0280	5/55M(	....
^eriDvorof eHG3e pwDo3ru Gurd 4^F0 HS)	388h46h4	0.0002	mgWg	....	....	<0.0280	5/752	....
^eriDvorof el tG3e pwDo3ru Gurd 4^F0 I S)	3X8h72h5	0.0002	mgWg	....	....	<0.0280	5/5M((	....
^eriDvoroout G3e pwDo3ru Gurd 4^FOS)	1X63h23h1	0.0002	mgWg	....	....	5/BBB	7/57	....
^eriDvorodeuG3e pwDo3ru Gurd 4^FmS)	338hXXh8	0.0002	mgWg	....	....	<0.0280	<0.0028	....
E^78B°TO^°-: ^eriDvoroGDkcDCGrsoHcDu Aurdp								
^eriDvoroswtG3oru Gurd 4^F- A)	3X8h22h4	0.001	mgWg	....	....	<0.028	<0.002	....
^eriDvorol e3tG3oru Gurd 4^F^eA)	2X06h70h8	0.0002	mgWg	....	....	5/B5M	5/5(25	....
^eriDvorof eHG3oru Gurd 4^F0 HA)	30Xh24h4	0.0002	mgWg	....	....	5/5MBM	5/877	....
^eriDvorof el tG3oru Gurd 4^F0 I A)	3X8h58h7	0.0002	mgWg	....	....	5/5715	5/5778	....
^eriDvoroout G3oru Gurd 4^FOA)	338h6Xh1	0.0002	mgWg	....	....	<0.0280	5/B5U	....
^eriDvoro3o3G3oru Gurd 4^FNA)	3X8h78h1	0.0002	mgWg	....	....	<0.0280	5/551P	....
^eriDvorodeuG3oru Gurd 4^FmA)	338hX6h2	0.0002	mgWg	....	....	<0.0280	<0.0028	....
^eriDvorow3deuG3oru Gurd 4^F_3mA)	2085h74h5	0.0002	mgWg	....	....	<0.0280	<0.0028	....
^eriDvorododeuG3oru Gurd 4^FmomA)	30Xh88h1	0.0002	mgWg	....	....	<0.0280	<0.0028	....
^eriDvorotrrdeuG3oru Gurd 4^FTrmA)	X2627h74h5	0.0002	mgWg	....	....	<0.0280	<0.0028	....
^eriDvorotetrGdeuG3oru Gurd 4^FTemA)	3X6h06hX	0.0008	mgWg	....	....	<0.0628	<0.0062	....
E^78B°TO^°C: ^eriDvoroGDkcDSwDo3Ga rtdep								
^eriDvoroout G3e pwDo3Ga rtde 4FOSA)	X84h71h6	0.0002	mgWg	....	....	<0.0280	<0.0028	....

Analytical Results

BubtS atriw: SOIL 4S atriw: SOIL)				Client sample ID	FR.SS5M 5.5/B	EW0 Eg.SSB(5.5/B	FR.SSB5 5.5/B	FR.T^B7 5/2.5/P	FR.T^B7 5/B.5/7
				Client sampling date / time	15fHMfh201X 00:00	17fHMfh201X 00:00	15fHMfh201X 00:00	15fHMfh201X 00:00	15fHMfh201X 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**ESB171282.55(**	**ESB171282.551**	**ESB171282.55M**	**ESB171282.55U**	**ESB171282.5B5**
					Aesult	Aesult	Aesult	Aesult	Aesult
E^78B°TO^°C: ^eriDvoroGIkcDSwDo3Ga rtdep . Co3tr8wed									
N.x etf cDI eriDvoroutG3e pwDo3Ga rtde 4x eFOSA)	31806fh32fh5	0.0008	mgWg	....	....	<0.0628	<0.0062	....
N.Etf cDI eriDvoroutG3e pwDo3Ga rtde 4EtFOSA)	4181fh80fh2	0.0008	mgWg	....	....	<0.0628	<0.0062	....
N.x etf cDI eriDvoroutG3e pwDo3Ga rtdoetf G3oD4x eFOSE)	24445fh07fhX	0.0008	mgWg	....	....	<0.0628	<0.0062	....
N.Etf cDI eriDvoroutG3e pwDo3Ga rtdoetf G3oD4EtFOSE)	1671fh77fh2	0.0008	mgWg	....	....	<0.0628	<0.0062	....
N.x etf cDI eriDvoroutG3e pwDo3Ga rtdoGuetnu Gurd 4x eFOSAA)	2388fh81fh7	0.0002	mgWg	....	....	<0.0280	<0.0028	....
N.Etf cDI eriDvoroutG3e pwDo3Ga rtdoGuetnu Gurd 4EtFOSAA)	2771fh80fh6	0.0002	mgWg	....	....	<0.0280	<0.0028	....
E^78B°TO^°m: 43:7) FDvoroteDa er SwDo3nu Aurdp									
2:7 FDvoroteDa er pwDo3nu Gurd 42:7 FTS)	X8X124fhX2fh4	0.0008	mgWg	....	....	<0.0280	<0.0028	....
(:7 FDvoroteDa er pwDo3nu Gurd 4(:7 FTS)	2X617fh7Xfh2	0.0008	mgWg	....	....	<0.0280	<0.0028	....
M7 FDvoroteDa er pwDo3nu Gurd 4M7 FTS)	37105fh34fh4	0.0008	mgWg	....	....	<0.0280	<0.0028	....
B5:7 FDvoroteDa er pwDo3nu Gurd 4B5:7 FTS)	120226fh60fh0	0.0008	mgWg	....	....	<0.0280	<0.0028	....
E^78B°TO^°^: ^FAS Swa p									
Swa oi ^FAS	hfth	0.0002	mgWg	....	....	**5/885**	**7/MI**	....
Swa oi ^F0 HS G3d ^FOS	388fh46fh4WX63fh23h1	0.0002	mgWg	....	....	**5/BBB**	**7/78**	....
Swa oi TO^ C2 . CB2 CGrsoHcDBtep G3d C2 . CMSwDo3Gtep	hfth	0.0002	mgWg	....	....	**5/885**	**7/MI**	....
E^78B°TO^°S: ^FAS SwrrobGte									
B8C2.^FOS	hfth	0.0002	%	....	....	**MP/5**	**MP/5**	....
B8CM^FOA	hfth	0.0002	%	....	....	**1P/5**	**(P/5**	....

Surrogate Control Limits

BubhS atriw: **ml WATER LEAC0 ATE**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
E^78BS: ^FAS SwrrobGte			
B8C2.^FOS	Hth	60	120
B8CM^FOA	Hth	60	120

BubhS atriw: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
E^78B° TO^° S: ^FAS SwrrobGte			
B8C2.^FOS	Hth	60	130
B8CM^FOA	Hth	60	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1727434**	Page	: 1 of 10
y lCi b	: **GOLDER ASSOCIATES**	7aLoratort	: ni ECoi v ei bal mCEGCi Dt Bi et
y oi bacb	: MS AO RN I O nN	y oi bacb	: y ustov er DerECces nD
RBBress	: P I HI d 1X34 MA7TI N Q7m, RUDTSR7AR 4064	RBBress	: 2XXh25p O ooB+ar- SoaB Dv Cj fCIB NDO Rustralia 2164
Tele+j oi e	: 861 0X 40G4 5200	Tele+j oi e	: 861h2h5X54 5GGG
ProVetcb	: 1X504GX	mate Dav +les SeceCeB	: 02hNoEh201X
I rBer i uv Ler	: PI 06133	mate Ri alt sG y ov v ei ceB	: 03hNoEh201X
y hi hy i uv Ler	: hhhh	Assue mate	: 10hNoEh201X
Dav +ler	: nMMR y I SNAD/		
DCe	: hhhh		
Quote i uv Ler	: nN90029l6 E2		
No. of sav +les receCeB	: 10		
No. of sav +les ai alt seB	: 10		



Tj G re+orbsu+erseBes ai t +reECous re+ort(s) wCj bj G referei ce. Sesulbs a++lt bo bj e sav +le(s) as suLv CbeB. Tj G Bocuv ei bsj all i obLe re+roBuceB, exce+bC full.

Tj G QualCt y oi brol Se+orbcoi baCs bj e followCg Cforv abCi :

- 7aLoratort mu+lCatc (mUP) Se+ort; SelabEe Percei bage mCferei ce (SPm) ai B Rcce+bai ce 70 Cs
- Metj oB Hlai - (MH) ai B 7aLoratort y oi brol D+Ce (7y D) Se+orb; SecoEert ai B Rcce+bai ce 70 Cs
- MabrQ D+Ce (MD) Se+ort; SecoEert ai B Rcce+bai ce 70 Cs

Signatories

Tj G Bocuv ei bj as Leei electroi Callt sGi eB Lt bj e aubj orCeB sGi atorGs Lelow. nlectroi C sGi Cg G carrGB oubC cov +lCi ce wCj +roceBures s+ecCeB C 21 y FS Parb11.

Signatories	*Position*	*Accreditation Category*
Rlex SossC	I rgai C y j ev Gb	Dt Bi et I rgai Cs, Dv Cj fCIB, NDO
Sat v oi B y ov v oBore	Astruv ei by j ev Gb	Dt Bi et Aorgai Cs, Dv Cj fCIB, NDO

General Comments

Tj e ai alt tCal +roceBures useB Lt tj e ni ECoi v ei tal mCEGCoi j aEe Leei BeEelo+eB frov estaLlGj eB Cteri atCoi allt recogi CeB +roceBures sucj as tj ose +uLlGj eB Lt tj e UDnPR, RP/ R, RD ai B NnPM. A j ouse BeEelo+eB +roceBures are ev +lot eB C tj e aLsei ce of Bocuv ei teB stai BarBs or Lt cl@i brequesb

Oj ere v oGure Beterv CatCoi j as Leei +erforv eB, results are re+orteB oi a Brt we@j bLasG.

Oj ere a re+orteB less tj ai (<) resulbG j @j er tj ai tj e 7I S, tj GV at Le Bue to +rC art sav +le extractBRgestate BCubCoi ai B9or CsuffC@i bsav +le for ai alt sG. Oj ere tj e 7I S of a re+orteB resulbBCfers frov stai BarB 7I S, tj GV at Le Bue to j @j

Ket : Ri oi t v ous = Sefers to sav +les wj Cj are i obs+ecCallt +arbof tj G wor- orBer Lubforv eB +arbof tj e Qy +rocess lob
y RD Nuv Ler = y RD regGrt i uv Ler frov BataLase v aCtaCeB Lt y j ev @al RLstracts DerECes. Tj e y j ev @al RLstracts DerECe G a BCEGCoi of tj e Rv erCai y j ev @al DocCnt.
7I S = 7C Cof re+ortCg
SPm = SelatCEe Percei tage mCferei ce
# = A BCates faCeB Qy

Laboratory Duplicate (DUP) Report

Tj e qualC coi trol terv 7aLoratort mu+lCate refers to a rai Bov lt selecteB CtralaLoratort s+lC 7aLoratort Bu+lCates +roECe CforvatCoi regarBCg v etj oB +recGCoi ai B sav +le j eterogei eC. Tj e +erv CeB rai ges for tj e SelatCEe Percei b meECatCoi (SPm) of 7aLoratort mu+lCates are s+ecCGB C R7D Metj oB QOAmN35 ai B are Be+ei Bei b oi tj e v agi CuBe of results C cov +arGoi to tj e leEel of re+ortCg: Sesulb < 10 bC es 7I S: No 7C C, SesulbLetweei 10 ai B 20 bC es 7I S: 0% hG0%; Sesulb> 20 bC es 7I S: 0% h20%.

DuLhMabrG: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1220140)									
nD1X2X434h001	RPhDD02 0h0.1	nR0GG MoGsture y oi tei b	hhh	1	%	2.2	2.1	4.50	No 7C C
nD1X2X4XGh02G	Ri oi t v ous	nR0GG MoGsture y oi tei b	hhh	1	%	X.6	5.0	4.63	No 7C C
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1217561)									
nD1X2X410h001	Ri oi t v ous	nP231d: PerfluoroLubai e sulfoi C acCB (PFHD)	3XGhX3hG	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoro+ei tai e sulfoi C acCB (PFPeD)	2X06hp1h4	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoroj exai e sulfoi C acCB (PF/ xD)	3GGh46h4	0.0002	v g9 g	0.0003	0.0003	0.00	No 7C C
		nP231d: Perfluoroj e+tai e sulfoi C acCB (PF/ +D)	3XGhp2h5	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluorooctai e sulfoi C acCB (PFI D)	1X63h23h1	0.0002	v g9 g	0.0055	0.00p0	3.21	0% h20%
		nP231d: PerfluoroBecai e sulfoi C acCB (PFmD)	33GhXXh3	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
nD1X2X411h002	Ri oi t v ous	nP231d: PerfluoroLubai e sulfoi C acCB (PFHD)	3XGhX3hG	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoro+ei tai e sulfoi C acCB (PFPeD)	2X06hp1h4	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoroj exai e sulfoi C acCB (PF/ xD)	3GGh46h4	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoroj e+tai e sulfoi C acCB (PF/ +D)	3XGhp2h5	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluorooctai e sulfoi C acCB (PFI D)	1X63h23h1	0.0002	v g9 g	0.0036	0.0036	0.00	0% hG0%
		nP231d: PerfluoroBecai e sulfoi C acCB (PFmD)	33GhXXh3	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1217561)									
nD1X2X410h001	Ri oi t v ous	nP231d: Perfluoro+ei tai oC acCB (PFPeR)	2X06hp0h3	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoroj exai oC acCB (PF/ xR)	30Xh24h4	0.0002	v g9 g	0.0004	0.0003	0.00	No 7C C
		nP231d: Perfluoroj e+tai oC acCB (PF/ +R)	3XGh5Ghp	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluorooctai oC acCB (PFI R)	33Gh6Xh1	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoroi oi ai oC acCB (PFNR)	3XGhpGh1	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: PerfluoroBecai oC acCB (PFmR)	33GhX6h2	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: Perfluoroui Becai oC acCB (PFUi mR)	20G5hp4h5	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C
		nP231d: PerfluoroBoBecai oC acCB (PFmomR)	30XhGGh1	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7C C

DuLhMabrQ: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1217561) - continued									
nD1X2X410h001	Ri oi t v ous	nP231d: PerfluorobrGBecai oG acGB (PFTrmR)	X262pfp4h5	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: PerfluorotetraBecai oG acGB (PFTemR)	3X6h06hX	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: PerfluoroLutai oG acGB (PFHR)	3XGh22h4	0.001	v g9 g	<0.001	<0.001	0.00	No 7Q GD
nD1X2X411h002	Ri oi t v ous	nP231d: Perfluoro+ei tai oG acGB (PFPeR)	2X06hp0h3	0.0002	v g9 g	0.0003	0.0003	0.00	No 7Q GD
		nP231d: Perfluoroj exai oG acGB (PF/ xR)	30Xh24h4	0.0002	v g9 g	0.0003	0.0003	0.00	No 7Q GD
		nP231d: Perfluoroj e+tai oG acGB (PF/ +R)	3XGh5Ghp	0.0002	v g9 g	0.0002	0.0002	0.00	No 7Q GD
		nP231d: Perfluorooctai oG acGB (PFI R)	33Gh6Xh1	0.0002	v g9 g	0.000p	0.0010	0.00	No 7Q GD
		nP231d: Perfluoroi oi ai oG acGB (PFNR)	3XGhpGh1	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: PerfluoroBecai oG acGB (PFmR)	33GhX6h2	0.0002	v g9 g	0.0006	0.000G	0.00	No 7Q GD
		nP231d: Perfluoroui Becai oG acGB (PFUi mR)	20G5hp4h5	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: PerfluoroBoBecai oG acGB (PFmomR)	30XhGGh1	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: PerfluorobrGBecai oG acGB (PFTrmR)	X262pfp4h5	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: PerfluorotetraBecai oG acGB (PFTemR)	3X6h06hX	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: PerfluoroLutai oG acGB (PFHR)	3XGh22h4	0.001	v g9 g	<0.001	<0.001	0.00	No 7Q GD
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QC Lot: 1217561)									
nD1X2X410h001	Ri oi t v ous	nP231d: Perfluorooctai e sulfoi av GBe (FI DR)	XG4hp1h6	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: NhMetj t l +erfluorooctai e sulfoi av GBoacetGC acGB (MeFI DRR)	23GGh81hp	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: Nhntj t l +erfluorooctai e sulfoi av GBoacetGC acGB (ntFI DRR)	2pp1hG0h6	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: NhMetj t l +erfluorooctai e sulfoi av GBe (MeFI DR)	31G06h82h5	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: Nhntj t l +erfluorooctai e sulfoi av GBe (ntFI DR)	41G1hG0h2	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: NhMetj t l +erfluorooctai e sulfoi av GBoetj ai ol (MeFI Dn)	24445h0phX	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: Nhntj t l +erfluorooctai e sulfoi av GBoetj ai ol (ntFI Dn)	16p1hpph2	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
nD1X2X411h002	Ri oi t v ous	nP231d: Perfluorooctai e sulfoi av GBe (FI DR)	XG4hp1h6	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: NhMetj t l +erfluorooctai e sulfoi av GBoacetGC acGB (MeFI DRR)	23GGh81hp	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: Nhntj t l +erfluorooctai e sulfoi av GBoacetGC acGB (ntFI DRR)	2pp1hG0h6	0.0002	v g9 g	<0.0002	<0.0002	0.00	No 7Q GD
		nP231d: NhMetj t l +erfluorooctai e sulfoi av GBe (MeFI DR)	31G06h82h5	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: Nhntj t l +erfluorooctai e sulfoi av GBe (ntFI DR)	41G1hG0h2	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: NhMetj t l +erfluorooctai e sulfoi av GBoetj ai ol (MeFI Dn)	24445h0phX	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD
		nP231d: Nhntj t l +erfluorooctai e sulfoi av GBoetj ai ol (ntFI Dn)	16p1hpph2	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 7Q GD

DuLhMabrQ: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1217561)									
nD1X2X410h001	Ri oi t v ous	nP231d: 4:2 Fluorotelov er sulfoi C acB (4:2 FTD)	XGX124hX2h4	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
		nP231d: 6:2 Fluorotelov er sulfoi C acB (6:2 FTD)	2X61phpXh2	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
		nP231d: 5:2 Fluorotelov er sulfoi C acB (5:2 FTD)	3p105h84h4	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
		nP231d: 10:2 Fluorotelov er sulfoi C acB (10:2 FTD)	120226h60h0	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
nD1X2X411h002	Ri oi t v ous	nP231d: 4:2 Fluorotelov er sulfoi C acB (4:2 FTD)	XGX124hX2h4	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
		nP231d: 6:2 Fluorotelov er sulfoi C acB (6:2 FTD)	2X61phpXh2	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
		nP231d: 5:2 Fluorotelov er sulfoi C acB (5:2 FTD)	3p105h84h4	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
		nP231d: 10:2 Fluorotelov er sulfoi C acB (10:2 FTD)	120226h60h0	0.000G	v g9 g	<0.000G	<0.000G	0.00	No 70 B
EP231_TOP_P: PFAS Sums (QC Lot: 1217561)									
nD1X2X410h001	Ri oi t v ous	nP231d: Duv of PFRD	hhh	0.0002	v g9 g	0.00pG	0.00p6	1.0G	0% h20%
		nP231d: Duv of PF/ xD ai B PFI D	3GGh46h49lX63h 23hl	0.0002	v g9 g	0.00p1	0.00p4	3.0p	0% h20%
		nP231d: Duv of TI P y 4 hy 14 y arLoxt labes ai B y 4 hy 5 Dulfoi abes	hhh	0.0002	v g9 g	0.00pG	0.00p6	1.0G	0% h20%
nD1X2X411h002	Ri oi t v ous	nP231d: Duv of PFRD	hhh	0.0002	v g9 g	0.00Gp	0.00Gp	0.00	0% h20%
		nP231d: Duv of PF/ xD ai B PFI D	3GGh46h49lX63h 23hl	0.0002	v g9 g	0.0036	0.0036	0.00	0% hG0%
		nP231d: Duv of TI P y 4 hy 14 y arLoxt labes ai B y 4 hy 5 Dulfoi abes	hhh	0.0002	v g9 g	0.00Gp	0.00Gp	0.00	0% h20%

DuLhMabrQ: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1222540)									
nH1X22XX2h002	Ri oi t v ous	nP231dh77: PerfluoroLubai e sulfoi C acB (PFHD)	3XGhX3hG	0.002	µg97	<0.002	<0.002	0.00	No 70 B
		nP231dh77: Perfluoro+ei bai e sulfoi C acB (PFPeD)	2X06hp1h4	0.002	µg97	<0.002	<0.002	0.00	No 70 B
		nP231dh77: Perfluoroj exai e sulfoi C acB (PF/ xD)	3GGh46h4	0.002	µg97	0.00X	0.00X	0.00	No 70 B
		nP231dh77: Perfluoroj e+bai e sulfoi C acB (PF/ +D)	3XGhp2h5	0.002	µg97	<0.002	<0.002	0.00	No 70 B
		nP231dh77: Perfluorooctbai e sulfoi C acB (PFI D)	1X63h23hl	0.002	µg97	0.00p	0.00p	0.00	No 70 B
		nP231dh77: PerfluoroBecai e sulfoi C acB (PFmD)	33GhXXh8	0.002	µg97	<0.002	<0.002	0.00	No 70 B

DuLhMabr@: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1222540) - continued									
nD1X2X434h010	FShTP12 0.1h0.2	nP231dh77: PerfluoroLutai e sulfoi C acB (PFHD)	3XGhX3hG	0.002	µg97	0.023	0.021	p.0p	No 70\ @
		nP231dh77: Perfluoro+ei tai e sulfoi C acB (PFPeD)	2X06hp1h4	0.002	µg97	0.030	0.033	p.G2	No 70\ @
		nP231dh77: Perfluoroj exai e sulfoi C acB (PF/ xD)	3GGh46h4	0.002	µg97	0.pG2	0.pG3	0.10G	0% h20%
		nP231dh77: Perfluoroj e+tai e sulfoi C acB (PF/ +D)	3XGhp2h5	0.002	µg97	0.21p	0.210	4.20	0% h20%
		nP231dh77: Perfluorooctai e sulfoi C acB (PFI D)	1X63h23h1	0.002	µg97	1G3	143	6.6X	0% h20%
		nP231dh77: PerfluoroBecai e sulfoi C acB (PFmD)	33GhXXh3	0.002	µg97	0.014	0.012	1G4	No 70\ @
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1222540)									
nH1X22XX2h002	Ri oi t v ous	nP231dh77: Perfluoro+ei tai oC acB (PFPeR)	2X06hp0h3	0.002	µg97	0.01X	0.01p	13.p	No 70\ @
		nP231dh77: Perfluoroj exai oC acB (PF/ xR)	30Xh24h4	0.002	µg97	0.214	0.22p	6.65	0% h20%
		nP231dh77: Perfluoroj e+tai oC acB (PF/ +R)	3XGh5Ghp	0.002	µg97	0.00G	0.00G	0.00	No 70\ @
		nP231dh77: Perfluorooctai oC acB (PFI R)	33Gh6Xh1	0.002	µg97	0.0G6	0.0G5	3.66	0% h20%
		nP231dh77: Perfluoroi oi ai oC acB (PFNR)	3XGhpGh1	0.002	µg97	0.002	0.002	0.00	No 70\ @
		nP231dh77: PerfluoroBecai oC acB (PFmR)	33GhX6h2	0.002	µg97	0.005	0.005	0.00	No 70\ @
		nP231dh77: Perfluoroui Becai oC acB (PFUi mR)	20G5hp4h5	0.002	µg97	<0.002	<0.002	0.00	No 70\ @
		nP231dh77: PerfluoroBoBecai oC acB (PFmomR)	30XhGGh1	0.002	µg97	<0.002	<0.002	0.00	No 70\ @
		nP231dh77: PerfluorobrBecai oC acB (PFTrmR)	X262php4h5	0.002	µg97	<0.002	<0.002	0.00	No 70\ @
		nP231dh77: PerfluorotetraBecai oC acB (PFTemR)	3X6h06hX	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
		nP231dh77: PerfluoroLutai oC acB (PFHR)	3XGh22h4	0.01	µg97	<0.01	<0.01	0.00	No 70\ @
nD1X2X434h010	FShTP12 0.1h0.2	nP231dh77: Perfluoro+ei tai oC acB (PFPeR)	2X06hp0h3	0.002	µg97	0.0p0	0.124	31.5	0% hG0%
		nP231dh77: Perfluoroj exai oC acB (PF/ xR)	30Xh24h4	0.002	µg97	0.261	0.262	0.352	0% h20%
		nP231dh77: Perfluoroj e+tai oC acB (PF/ +R)	3XGh5Ghp	0.002	µg97	0.10p	0.10X	1.5G	0% hG0%
		nP231dh77: Perfluorooctai oC acB (PFI R)	33Gh6Xh1	0.002	µg97	0.3p3	0.404	2.X6	0% h20%
		nP231dh77: Perfluoroi oi ai oC acB (PFNR)	3XGhpGh1	0.002	µg97	0.100	0.112	11.3	0% hG0%
		nP231dh77: PerfluoroBecai oC acB (PFmR)	33GhX6h2	0.002	µg97	0.03p	0.041	G00	No 70\ @
		nP231dh77: Perfluoroui Becai oC acB (PFUi mR)	20G5hp4h5	0.002	µg97	<0.010	<0.010	0.00	No 70\ @
		nP231dh77: PerfluoroBoBecai oC acB (PFmomR)	30XhGGh1	0.002	µg97	<0.010	<0.010	0.00	No 70\ @
		nP231dh77: PerfluorobrBecai oC acB (PFTrmR)	X262php4h5	0.002	µg97	<0.010	<0.010	0.00	No 70\ @
		nP231dh77: PerfluorotetraBecai oC acB (PFTemR)	3X6h06hX	0.00G	µg97	<0.02G	<0.02G	0.00	No 70\ @
		nP231dh77: PerfluoroLutai oC acB (PFHR)	3XGh22h4	0.01	µg97	<0.01	<0.01	0.00	No 70\ @
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1222540)									
nH1X22XX2h002	Ri oi t v ous	nP231dh77: Perfluorooctai e sulfoi av Be (FI DR)	XG4hp1h6	0.002	µg97	<0.002	<0.002	0.00	No 70\ @
		nP231dh77: NhMetj t l +erfluorooctai e sulfoi av BoacetC acB (MeFI DRR)	23GGh81hp	0.002	µg97	<0.002	<0.002	0.00	No 70\ @

DuLhMabr0: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1222540) - continued									
nH1X22XX2h002	Ri oi t v ous	nP231dh77: NhmhjtI+erfluorooctai e sulfoi av @boacetaC acB (nt5FI DRR)	2pp1hG0h6	0.002	µg97	<0.002	<0.002	0.00	No 70\ @
		nP231dh77: NhMetjtI+erfluorooctai e sulfoi av @e (MeFI DR)	31G06h82h5	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
		nP231dh77: NhmhjtI+erfluorooctai e sulfoi av @e (nt5FI DR)	41G1hG0h2	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
		nP231dh77: NhMetjtI+erfluorooctai e sulfoi av @oetjai ol (MeFI Dn)	24445h0phX	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
		nP231dh77: NhmhjtI+erfluorooctai e sulfoi av @oetjai ol (nt5FI Dn)	16p1hpph2	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
nD1X2X434h010	FShTP12 0.1h0.2	nP231dh77: Perfluorooctai e sulfoi av @e (FI DR)	XG4hp1h6	0.002	µg97	0.0GX	0.0G5	1.X4	No 70\ @
		nP231dh77: NhMetjtI+erfluorooctai e sulfoi av @oacetaC acB (MeFI DRR)	23GGh81hp	0.002	µg97	<0.010	<0.010	0.00	No 70\ @
		nP231dh77: NhmhjtI+erfluorooctai e sulfoi av @oacetaC acB (nt5FI DRR)	2pp1hG0h6	0.002	µg97	<0.010	<0.010	0.00	No 70\ @
		nP231dh77: NhMetjtI+erfluorooctai e sulfoi av @e (MeFI DR)	31G06h82h5	0.00G	µg97	<0.02G	<0.02G	0.00	No 70\ @
		nP231dh77: NhmhjtI+erfluorooctai e sulfoi av @e (nt5FI DR)	41G1hG0h2	0.00G	µg97	<0.02G	<0.02G	0.00	No 70\ @
		nP231dh77: NhMetjtI+erfluorooctai e sulfoi av @oetjai ol (MeFI Dn)	24445h0phX	0.00G	µg97	<0.02G	<0.02G	0.00	No 70\ @
		nP231dh77: NhmhjtI+erfluorooctai e sulfoi av @oetjai ol (nt5FI Dn)	16p1hpph2	0.00G	µg97	<0.02G	<0.02G	0.00	No 70\ @
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1222540)									
nH1X22XX2h002	Ri oi t v ous	nP231dh77: 4:2 Fluorotelov er sulfoi C acB (4:2 FTD)	XGX124hX2h4	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
		nP231dh77: 6:2 Fluorotelov er sulfoi C acB (6:2 FTD)	2X61phpXh2	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
		nP231dh77: 5:2 Fluorotelov er sulfoi C acB (5:2 FTD)	3p105h84h4	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
		nP231dh77: 10:2 Fluorotelov er sulfoi C acB (10:2 FTD)	120226h60h0	0.00G	µg97	<0.00G	<0.00G	0.00	No 70\ @
nD1X2X434h010	FShTP12 0.1h0.2	nP231dh77: 4:2 Fluorotelov er sulfoi C acB (4:2 FTD)	XGX124hX2h4	0.00G	µg97	<0.010	<0.010	0.00	No 70\ @
		nP231dh77: 6:2 Fluorotelov er sulfoi C acB (6:2 FTD)	2X61phpXh2	0.00G	µg97	0.Gp1	0.G62	G.03	0% h20%
		nP231dh77: 5:2 Fluorotelov er sulfoi C acB (5:2 FTD)	3p105h84h4	0.00G	µg97	0.05X	0.051	X.14	No 70\ @
		nP231dh77: 10:2 Fluorotelov er sulfoi C acB (10:2 FTD)	120226h60h0	0.00G	µg97	<0.010	<0.010	0.00	No 70\ @

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

Tj e qualC1 coi brol terv Metj oB 9 7aLorat brt Hlai - refers bo ai ai alt be free v abr@ bo wj C j all reagei bs are aBBeB C tj e sav e Eoluv es or +ro+orbC i s as useB C stai BarB sav +le +re+arab C i . Tj e +ur+ose of tj G Qy +arav eter G bo v oi C br +obei bAl laLorat brt coi bav CatC i . Tj e qualC1 coi brol terv 7aLorat brt y oi brol D+Ce (7y D) refers bo a cerbC@B referei ce v aterGl, or a -i owi C berferei ce free v abr@ s+CeB wC j bargeb ai alt bes. Tj e +ur+ose of tj G Qy +arav eter G bo v oi C br v etj oB +recG C i ai B accuract C Be+ei Bei bof sav +le v abr@. mt i av C SecoEert 7V C bs are LaseB oi stabGt@al eEaluab C i of +rocesseB 7y D.

DuLhMabr@: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QCLot: 1217561)								
nP231d: PerfluoroLubai e sulfoi C acG (PFHD)	3XGhX3hG	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: Perfluoro+ei bai e sulfoi C acG (PFPeD)	2X06hp1h4	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: Perfluoroj exai e sulfoi C acG (PF/ xD)	3GGh46h4	0.0002	v g9 g	<0.0002	0.0006 v g9 g	12p	G0	1G0
nP231d: Perfluoroj e+bai e sulfoi C acG (PF/ +D)	3XGhp2h5	0.0002	v g9 g	<0.0002	0.0003 v g9 g	60.0	G0	1G0
nP231d: Perfluorooctai e sulfoi C acG (PFI D)	1X63h23h1	0.0002	v g9 g	<0.0002	0.0066 v g9 g	p2.2	G0	1G0
nP231d: PerfluoroBecai e sulfoi C acG (PFmD)	33GhXXh8	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QCLot: 1217561)								
nP231d: PerfluoroLubai oC acG (PFHR)	3XGh22h4	0.001	v g9 g	<0.001	0.0052 v g9 g	pG.1	G0	1G0
nP231d: Perfluoro+ei bai oC acG (PFPeR)	2X06hp0h3	0.0002	v g9 g	<0.0002	0.0005 v g9 g	GX.5	G0	1G0
nP231d: Perfluoroj exai oC acG (PF/ xR)	30Xh24h4	0.0002	v g9 g	<0.0002	0.00Gp v g9 g	X5.4	G0	1G0
nP231d: Perfluoroj e+bai oC acG (PF/ +R)	3XGh5Ghp	0.0002	v g9 g	<0.0002	0.0033 v g9 g	6G.G	G0	1G0
nP231d: Perfluorooctai oC acG (PFI R)	33Gh6Xh1	0.0002	v g9 g	<0.0002	0.0015 v g9 g	6p.X	G0	1G0
nP231d: Perfluoroi oi ai oC acG (PFNR)	3XGhpGh1	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: PerfluoroBecai oC acG (PFmR)	33GhX6h2	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: Perfluoroui Becai oC acG (PFUi mR)	20G5hp4h5	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: PerfluoroBoBecai oC acG (PFmomR)	30XhGGh1	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: PerfluorobrGBecai oC acG (PFTrmR)	X262php4h5	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: PerfluorobetraBecai oC acG (PFTemR)	3X6h06hX	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QCLot: 1217561)								
nP231d: Perfluorooctai e sulfoi av Ge (FI DR)	XG4hp1h6	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: NhMetj t l +erfluorooctai e sulfoi av Ge (MeFI DR)	31G06h82h5	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
nP231d: Nhnbj t l +erfluorooctai e sulfoi av Ge (nbFI DR)	41GthG0h2	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
nP231d: NhMetj t l +erfluorooctai e sulfoi av GEoetj ai ol (MeFI Dn)	24445h0phX	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
nP231d: Nhnbj t l +erfluorooctai e sulfoi av GEoetj ai ol (nbFI Dn)	16p1hpph2	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
nP231d: NhMetj t l +erfluorooctai e sulfoi av GEoacetC acG (MeFI DRR)	23GGh81hp	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: Nhnbj t l +erfluorooctai e sulfoi av GEoacetC acG (nbFI DRR)	2pp1hG0h6	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1217561)								
nP231d: 4:2 Fluorotelov er sulfoi C acG (4:2 FTD)	XGX124hX2h4	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
nP231d: 6:2 Fluorotelov er sulfoi C acG (6:2 FTD)	2X61phpXh2	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
nP231d: 5:2 Fluorotelov er sulfoi C acG (5:2 FTD)	3p105h84h4	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh

DuLhMatrQ: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1217561) - continued								
nP231d: 10:2 Fluorotelov er sulfoi C acB (10:2 FTD)	120226r60r0	0.000G	v g9 g	<0.000G	hhh	hhh	hhh	hhh
EP231_TOP_P: PFAS Sums (QCLot: 1217561)								
nP231d: Duv of PFRD	hhh	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: Duv of PF/ xD ai B PFI D	3GGr46r49lX 63r23rl	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh
nP231d: Duv of TI P y 4 hy 14 y arLoxt latæs ai B y 4 hy 5 Dulfoi ates	hhh	0.0002	v g9 g	<0.0002	hhh	hhh	hhh	hhh

DuLhMatrQ: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1222540)								
nP231dh77: PerfluoroLutai e sulfoi C acB (PFHD)	3XGrX3rG	0.002	µg97	<0.002	0.0Gµg97	51.2	G0	130
nP231dh77: Perfluoro+ei tai e sulfoi C acB (PFPeD)	2X06rp1r4	0.002	µg97	<0.002	0.0Gµg97	101	G0	130
nP231dh77: Perfluoroj exai e sulfoi C acB (PF/ xD)	3GGr46r4	0.002	µg97	<0.002	0.0Gµg97	pG6	G0	130
nP231dh77: Perfluoroj e+tai e sulfoi C acB (PF/ +D)	3XGrp2r5	0.002	µg97	<0.002	0.0Gµg97	pX.4	G0	130
nP231dh77: Perfluorooctai e sulfoi C acB (PFI D)	1X63r23rl	0.002	µg97	<0.002	0.0Gµg97	Gp.6	G0	130
nP231dh77: PerfluoroBecai e sulfoi C acB (PFmD)	33GrXXr3	0.002	µg97	<0.002	0.0Gµg97	105	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1222540)								
nP231dh77: PerfluoroLutai oC acB (PFHR)	3XGr22r4	0.01	µg97	<0.01	0.2Gµg97	10p	G0	130
nP231dh77: Perfluoro+ei tai oC acB (PFPeR)	2X06rp0r3	0.002	µg97	<0.002	0.0Gµg97	p3.5	G0	130
nP231dh77: Perfluoroj exai oC acB (PF/ xR)	30Xr24r4	0.002	µg97	<0.002	0.0Gµg97	103	G0	130
nP231dh77: Perfluoroj e+tai oC acB (PF/ +R)	3XGr5Grp	0.002	µg97	<0.002	0.0Gµg97	104	G0	130
nP231dh77: Perfluorooctai oC acB (PFI R)	33Gr6Xr1	0.002	µg97	<0.002	0.0Gµg97	p5.6	G0	130
nP231dh77: Perfluoroi oi ai oC acB (PFNR)	3XGrpGr1	0.002	µg97	<0.002	0.0Gµg97	103	G0	130
nP231dh77: PerfluoroBecai oC acB (PFmR)	33GrX6r2	0.002	µg97	<0.002	0.0Gµg97	100	G0	130
nP231dh77: Perfluoroui Becai oC acB (PFUi mR)	20G5rp4r5	0.002	µg97	<0.002	0.0Gµg97	pp.0	40	130
nP231dh77: PerfluoroBoBecai oC acB (PFmomR)	30XrGGr1	0.002	µg97	<0.002	0.0Gµg97	116	40	130
nP231dh77: PerfluorobrGBecai oC acB (PFTrmR)	X262prp4r5	0.002	µg97	<0.002	0.0Gµg97	X6.6	40	130
nP231dh77: PerfluorotetraBecai oC acB (PFTemR)	3X6r06rX	0.00G	µg97	<0.00G	0.12Gµg97	112	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1222540)								
nP231dh77: Perfluorooctai e sulfoi av GBe (FI DR)	XG4rp1r6	0.002	µg97	<0.002	0.0Gµg97	110	40	130
nP231dh77: NrMetj t l +erfluorooctai e sulfoi av GBe (MeFI DR)	31G06r82r5	0.00G	µg97	<0.00G	0.12Gµg97	11X	40	130
nP231dh77: Nrnbj t l +erfluorooctai e sulfoi av GBe (ntFI DR)	41GtrG0r2	0.00G	µg97	<0.00G	0.12Gµg97	pG.1	40	130
nP231dh77: NrMetj t l +erfluorooctai e sulfoi av GBoetj ai ol (MeFI Dn)	24445r0prX	0.00G	µg97	<0.00G	0.12Gµg97	10G	G0	130
nP231dh77: Nrnbj t l +erfluorooctai e sulfoi av GBoetj ai ol (ntFI Dn)	16p1rppr2	0.00G	µg97	<0.00G	0.12Gµg97	52.6	40	130

DuLhMabr@: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1222540) - continued								
nP231dh77: NhMetj t l +erfluorooctai e sulfoi av @oacet@C acC@ (MeFI DRR)	23GG361hp	0.002	µg97	<0.002	0.0Gµg97	pX.2	G0	130
nP231dh77: Nhmtj t l +erfluorooctai e sulfoi av @oacet@C acC@ (ntFI DRR)	2pp1hG0h6	0.002	µg97	<0.002	0.0Gµg97	p6.0	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1222540)								
nP231dh77: 4:2 Fluorotelov er sulfoi C acC@ (4:2 FTD)	XGX124hX2h4	0.00G	µg97	<0.00G	0.0Gµg97	10G	G0	130
nP231dh77: 6:2 Fluorotelov er sulfoi C acC@ (6:2 FTD)	2X61phpXh2	0.00G	µg97	<0.00G	0.0Gµg97	10p	G0	130
nP231dh77: 5:2 Fluorotelov er sulfoi C acC@ (5:2 FTD)	3p105h84h4	0.00G	µg97	<0.00G	0.0Gµg97	106	G0	130
nP231dh77: 10:2 Fluorotelov er sulfoi C acC@ (10:2 FTD)	120226h60h0	0.00G	µg97	<0.00G	0.0Gµg97	55.2	G0	130

Matrix Spike (MS) Report

Tj e qualC@ coi trol terv MabrQ D+Ce (MD) refers to ai C@ralaLoratort s+IC@ sav +le s+CeB wQj a re+resei tabCEe seb of targeb ai alt tes. Tj e +ur+ose of tj iS Qy +arav eter G@ to v oi C@r +otei t@al v abrQ effects oi ai alt te recoEer@s. Dtabt@ SecoEert 7Q C@s as +er laLoratort mata QualC@ I LVtcbCEes (mQI s). ABeal recoEert rai ges stateB v at Le waCEeB C tj e eEei bof sav +le v abrQ C@erferei ce.

DuLhMabr@: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1222540)							
nM1X1G0G3h020	Ri oi t v ous	nP231dh77: PerfluoroLubai e sulfoi C acC@ (PFHD)	3XGhX3hG	0.0Gµg97	54.4	G0	130
		nP231dh77: Perfluoro+ei tai e sulfoi C acC@ (PFPeD)	2X06hp1h4	0.0Gµg97	p1.5	G0	130
		nP231dh77: Perfluoroj exai e sulfoi C acC@ (PF/ xD)	3GGh46h4	0.0Gµg97	53.5	G0	130
		nP231dh77: Perfluoroj e+tai e sulfoi C acC@ (PF/ +D)	3XGhp2h5	0.0Gµg97	p4.2	G0	130
		nP231dh77: Perfluorooctai e sulfoi C acC@ (PFI D)	1X63h23hl	0.0Gµg97	p0.2	G0	130
		nP231dh77: PerfluoroBecai e sulfoi C acC@ (PFmD)	33GhXXh8	0.0Gµg97	pG.5	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1222540)							
nM1X1G0G3h020	Ri oi t v ous	nP231dh77: PerfluoroLubai oC acC@ (PFHR)	3XGh22h4	0.2Gµg97	100	30	130
		nP231dh77: Perfluoro+ei tai oC acC@ (PFPeR)	2X06hp0h8	0.0Gµg97	p1.6	G0	130
		nP231dh77: Perfluoroj exai oC acC@ (PF/ xR)	30Xh24h4	0.0Gµg97	p4.4	G0	130
		nP231dh77: Perfluoroj e+tai oC acC@ (PF/ +R)	3XGh5Ghp	0.0Gµg97	pp.4	G0	130
		nP231dh77: Perfluorooctai oC acC@ (PFI R)	33Gh6Xh1	0.0Gµg97	5X.4	G0	130
		nP231dh77: Perfluoroi oi ai oC acC@ (PFNR)	3XGhpGh1	0.0Gµg97	p2.4	G0	130
		nP231dh77: PerfluoroBecai oC acC@ (PFmR)	33GhX6h2	0.0Gµg97	p3.5	G0	130
		nP231dh77: Perfluoroui Becai oC acC@ (PFUi mR)	20G5hp4h5	0.0Gµg97	p3.4	30	130
		nP231dh77: PerfluoroBoBecai oC acC@ (PFmomR)	30XhG3h1	0.0Gµg97	10G	30	130
		nP231dh77: PerfluorobC@ecai oC acC@ (PFTrmR)	X262php4h5	0.0Gµg97	X2.2	30	130
		nP231dh77: PerfluorobetraBecai oC acC@ (PFTemR)	3X6h06hX	0.12Gµg97	104	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1222540)							
nM1X1G0G3h020	Ri oi t v ous	nP231dh77: Perfluorooctai e sulfoi av @e (FI DR)	XGhp1h6	0.0Gµg97	101	30	130

DuLhMabrQ: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1222540) - continued							
nM1X1G0G3h020	Ri oi t v ous	nP231dh77: NhMetj t l +erfluorooctai e sulfoi av (Be (MeFl DR)	31G06h82h5	0.12Gµg97	10p	30	130
		nP231dh77: Nmhj t l +erfluorooctai e sulfoi av (Be (nbFl DR)	41G1hG0h2	0.12Gµg97	p6.2	30	130
		nP231dh77: NhMetj t l +erfluorooctai e sulfoi av (Boetj ai ol (MeFl Dn)	24445h0phX	0.12Gµg97	pG.1	30	130
		nP231dh77: Nmhj t l +erfluorooctai e sulfoi av (Boetj ai ol (nbFl Dn)	16p1hpph2	0.12Gµg97	p1.4	30	130
		nP231dh77: NhMetj t l +erfluorooctai e sulfoi av (BoacetjC acB (MeFl DRR)	23GG3h81hp	0.0Gµg97	p2.4	30	130
		nP231dh77: Nmhj t l +erfluorooctai e sulfoi av (BoacetjC acB (nbFl DRR)	2pp1hG0h6	0.0Gµg97	p1.4	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1222540)							
nM1X1G0G3h020	Ri oi t v ous	nP231dh77: 4:2 Fluorotelov er sulfoi C acB (4:2 FTD)	XGX124hX2h4	0.0Gµg97	103	G0	130
		nP231dh77: 6:2 Fluorotelov er sulfoi C acB (6:2 FTD)	2X61phpXh2	0.0Gµg97	101	G0	130
		nP231dh77: 5:2 Fluorotelov er sulfoi C acB (5:2 FTD)	3p105h84h4	0.0Gµg97	102	G0	130
		nP231dh77: 10:2 Fluorotelov er sulfoi C acB (10:2 FTD)	120226h60h0	0.0Gµg97	X6.5	G0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1727434**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR IWAN OWEN	Telephone	: +61-2-8784 8555
Project	: 1780457	Date Samples Received	: 02-Nov-2017
Site	: ----	Issue Date	: 10-Nov-2017
Sampler	: EMMA CORNISH	No. of samples received	: 10
Order number	: PO06133	No. of samples analysed	: 10

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.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP231S: PFAS Surrogate	ES1727434-006	FR-SS08 0-0.1	**13C8-PFOA**	----	56.6 %	60-120 %	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / **Container** / Client Sample ID(s)		*Extraction / Preparation* Date extracted	Due for extraction	***Days overdue***	*Analysis* Date analysed	Due for analysis	***Days overdue***
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE (no PTFE)							
AP-SS02 - 0-0.1, FR-TP12 - 0.4-0.5	FR-SS10 - 0-0.1,	----	----	----	03-Nov-2017	01-Nov-2017	**2**
HDPE (no PTFE)							
AHEQ-SS15 - 0-0.1,	EWHEQ-SS19 - 0-0.1	----	----	----	03-Nov-2017	02-Nov-2017	**1**
EN60: Bottle Leaching Procedure							
Non-Volatile Leach: 14 day HT(e.g. SV organics)							
AP-SS03 - 0-0.1, FR-TP12 - 0.1-0.2	FR-SS08 - 0-0.1,	03-Nov-2017	01-Nov-2017	**2**	----	----	----
Non-Volatile Leach: 14 day HT(e.g. SV organics)							
AHEQ-SS12 - 0-0.1,	EWHEQ-SS16 - 0-0.1	03-Nov-2017	02-Nov-2017	**1**	----	----	----

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / Client Sample ID(s)		***Sample Date***	*Extraction / Preparation* ***Date extracted***	Due for extraction	Evaluation	*Analysis* ***Date analysed***	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE (no PTFE) (EA055)								
AP-SS02 - 0-0.1, FR-TP12 - 0.4-0.5	FR-SS10 - 0-0.1,	**18-Oct-2017**	**----**	----	----	**03-Nov-2017**	01-Nov-2017	×
HDPE (no PTFE) (EA055)								
AHEQ-SS15 - 0-0.1,	EWHEQ-SS19 - 0-0.1	**19-Oct-2017**	**----**	----	----	**03-Nov-2017**	02-Nov-2017	×

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: Bottle Leaching Procedure								
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60-Dla)								
AP-SS03 - 0-0.1, FR-TP12 - 0.1-0.2	FR-SS08 - 0-0.1,	**18-Oct-2017**	**03-Nov-2017**	01-Nov-2017	×	**----**	----	----
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60-Dla)								
AHEQ-SS12 - 0-0.1,	EWHEQ-SS16 - 0-0.1	**19-Oct-2017**	**03-Nov-2017**	02-Nov-2017	×	**----**	----	----
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X (TOP))								
AP-SS02 - 0-0.1, FR-TP12 - 0.4-0.5	FR-SS10 - 0-0.1,	**18-Oct-2017**	**03-Nov-2017**	16-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
HDPE (no PTFE) (EP231X (TOP))								
AHEQ-SS15 - 0-0.1,	EWHEQ-SS19 - 0-0.1	**19-Oct-2017**	**03-Nov-2017**	17-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X (TOP))								
AP-SS02 - 0-0.1, FR-TP12 - 0.4-0.5	FR-SS10 - 0-0.1,	**18-Oct-2017**	**03-Nov-2017**	16-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
HDPE (no PTFE) (EP231X (TOP))								
AHEQ-SS15 - 0-0.1,	EWHEQ-SS19 - 0-0.1	**19-Oct-2017**	**03-Nov-2017**	17-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
EP231_TOP_C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X (TOP))								
AP-SS02 - 0-0.1, FR-TP12 - 0.4-0.5	FR-SS10 - 0-0.1,	**18-Oct-2017**	**03-Nov-2017**	16-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
HDPE (no PTFE) (EP231X (TOP))								
AHEQ-SS15 - 0-0.1,	EWHEQ-SS19 - 0-0.1	**19-Oct-2017**	**03-Nov-2017**	17-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X (TOP))								
AP-SS02 - 0-0.1, FR-TP12 - 0.4-0.5	FR-SS10 - 0-0.1,	**18-Oct-2017**	**03-Nov-2017**	16-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
HDPE (no PTFE) (EP231X (TOP))								
AHEQ-SS15 - 0-0.1,	EWHEQ-SS19 - 0-0.1	**19-Oct-2017**	**03-Nov-2017**	17-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
EP231_TOP_P: PFAS Sums								
HDPE (no PTFE) (EP231X (TOP))								
AP-SS02 - 0-0.1, FR-TP12 - 0.4-0.5	FR-SS10 - 0-0.1,	**18-Oct-2017**	**03-Nov-2017**	16-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓
HDPE (no PTFE) (EP231X (TOP))								
AHEQ-SS15 - 0-0.1,	EWHEQ-SS19 - 0-0.1	**19-Oct-2017**	**03-Nov-2017**	17-Apr-2018	✓	**03-Nov-2017**	13-Dec-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding 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-LL)							
AP-SS03 - 0-0.1, AHEQ-SS12 - 0-0.1, FR-SS08 - 0-0.1, EWHEQ-SS16 - 0-0.1, FR-TP12 - 0.1-0.2	**03-Nov-2017**	**06-Nov-2017**	02-May-2018	✓	**06-Nov-2017**	02-May-2018	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL)							
AP-SS03 - 0-0.1, AHEQ-SS12 - 0-0.1, FR-SS08 - 0-0.1, EWHEQ-SS16 - 0-0.1, FR-TP12 - 0.1-0.2	**03-Nov-2017**	**06-Nov-2017**	02-May-2018	✓	**06-Nov-2017**	02-May-2018	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-LL)							
AP-SS03 - 0-0.1, AHEQ-SS12 - 0-0.1, FR-SS08 - 0-0.1, EWHEQ-SS16 - 0-0.1, FR-TP12 - 0.1-0.2	**03-Nov-2017**	**06-Nov-2017**	02-May-2018	✓	**06-Nov-2017**	02-May-2018	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL)							
AP-SS03 - 0-0.1, AHEQ-SS12 - 0-0.1, FR-SS08 - 0-0.1, EWHEQ-SS16 - 0-0.1, FR-TP12 - 0.1-0.2	**03-Nov-2017**	**06-Nov-2017**	02-May-2018	✓	**06-Nov-2017**	02-May-2018	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-LL)							
AP-SS03 - 0-0.1, AHEQ-SS12 - 0-0.1, FR-SS08 - 0-0.1, EWHEQ-SS16 - 0-0.1, FR-TP12 - 0.1-0.2	**03-Nov-2017**	**06-Nov-2017**	02-May-2018	✓	**06-Nov-2017**	02-May-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	1	17	**5.88**	**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-LL	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
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 (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	SOIL	In house, following oxidation per Houtz,Erika F.; Sedlak,David L. (2012): Oxidative Conversion as a Means of Detecting Precursors to Perfluoroalkyl Acids in Urban Runoff. In Environmental Science & Technology 46 (17), pp. 9342¿9349.: A portion of the oxidised sample is mixed with methanol (1:1) prior to analysis by LC-Electrospray-MS-MS,Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	SOIL	In-house: Analysis of fresh and saline waters by solid phase extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Deionised Water Leach	EN60-DIa	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
SPE preparation for LL and saline PFCs	EP231-SPE	SOIL	In house
TOP Digest for PFAS on soil Extract.	* ORG70-S	SOIL	In-House Extraction followed by digestion with oxidation per Houtz, Erika F.; Sedlak, David L. (2012): Oxidative Conversion as a Means of Detecting Precursors to Perfluoroalkyl Acids in Urban Runoff. In Environmental Science & Technology 46 (17), pp. 9342¿9349: A soil extract is taken to near dryness and made up to 5 mL with reagents. The sample is digested with persulfate under alkaline conditions, neutralised and prepared for analysis per EP231.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Page ... of ...

Project No:	1760457	Lab Name:	ALS - Brisbane
Site ID No.:		Quote No.:	EN/002/16V2
Sampled By:	Emma Cornish	Order No.:	PO04133
Turnaround Time:	24hrs ☐ 48hrs ☐	Standard ☐	Suite 6 Q.D 4133 AUSTRALIA
Delivery Option:	RAD ☐ FAX ☐	5 Days ☐ Date Required By:	
Report Format:	PDF ■	ERIK ☐ EXCEL ■	EMAIL ■ BULLETIN BOARD ☐ ESDAT ■ ENVIROSYS ■

GOLDER ASSOCIATES PTY LTD

Project Manager:

Job Contact: Emma Cornish

Phone: 07 4944 0200

Fax: 07 4944 0201

Email:

Phone: (07) 3110 0500 E-mail:

Golder Associates

ANALYSIS REQUIRED

Comments/Special Instructions:

Rebatch of EB1721789

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	PFAS - Full Suite TOPA (16 Analytes) (EP231X (TOPA))	ASLP Leachate - mobile (EN30) (Dissolved metal) / PFAS - Full Suite Low Level (28 Analytes) (EP231X (LL))				Comments
EB1721789014	1	AP-SS02	0-0.1	18/10/2017	DS	Soil	1	high	X				
EB1721789021	2	AP-SS03	0-0.1	18/10/2017	DS	Soil	1	high		X			
EB1721789044	3	AHEQ-SS15	0-0.1	19/10/2017	DS	Soil	1	high	X				
EB1721789041	4	AHEQ-SS12	0-0.1	19/10/2017	DS	Soil	1	high		X			
EB1721789049	5	EW/HEQ-SS19	0-0.1	19/10/2017	DS	Soil	1	high	X				
EB1721789036	6	FR-SS08	0-0.1	18/10/2017	DS	Soil	1	high		X			
EB1721789045	7	EW/HEQ-SS16	0-0.1	19/10/2017	DS	Soil	1	high		X			
EB1721789038	8	FR-SS10	0-0.1	18/10/2017	DS	Soil	1	high	X				
EB1721789030	9	FR-TP12	0.4-0.5	18/10/2017	DS	Soil	1	high	X				
EB1721789029	10	FR-TP12	0.1-0.2	18/10/2017	DS	Soil	1	high		X			

Environmental Division Sydney
Work Order Reference
ES1727434

Telephone : + 61-2-8784 8555

SAMPLE MATRIX - Soil/Sediment/Fill Water/Other

SAMPLE TYPE - Composite/Cyclone/Bulk/Grab/Hand Auger/Test Pit/Core/RC/Gas Sample/Other

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY:	Emma Cornish			
RECEIVED BY:		Golder	17/10/17	9:45 AM
RELEASED BY:				
RECEIVED BY:				
RELEASED BY:				
RECEIVED BY:				

HIGH CONCENTRATION: circle extent of parameters or analytes list

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment / Shipping Ref.
RELEASED BY:					
RECEIVED BY:					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

ELS
AM1004
Feb 2011

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1727434**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: MR IWAN OWEN	Contact	: Customer Services ES
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: iowen@golder.com.au	E-mail	: ALSEnviro.Sydney@alsglobal.com
Telephone	: +61 07 4054 8200	Telephone	: +61-2-8784 8555
Facsimile	: +61 07 4052 1546	Facsimile	: +61-2-8784 8500
Project	: 1780457	Page	: 1 of 3
Order number	: PO06133	Quote number	: ES2016GOLASS0005 (EN/002/16 v2)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: EMMA CORNISH		

Dates

Date Samples Received	: 02-Nov-2017 12:06	Issue Date	: 02-Nov-2017
Client Requested Due Date	: 09-Nov-2017	Scheduled Reporting Date	: **09-Nov-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: ----	Temperature	: 4.1'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 10 / 10

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Moisture Content : EA055		
AP-SS02 0-0.1	- HDPE (no PTFE)	- Soil Glass Jar - Unpreserved
AHEQ-SS15 0-0.1	- HDPE (no PTFE)	- Soil Glass Jar - Unpreserved
EWHEQ-SS19 0-0.1	- HDPE (no PTFE)	- Soil Glass Jar - Unpreserved
FR-SS10 0-0.1	- HDPE (no PTFE)	- Soil Glass Jar - Unpreserved
FR-TP12 0.4-0.5	- HDPE (no PTFE)	- Soil Glass Jar - Unpreserved
PFAS by LCMSMS after oxidation (TOP) : EP231X (TOP)		
AP-SS02 0-0.1	- HDPE (no PTFE)	- HDPE Soil Jar
AHEQ-SS15 0-0.1	- HDPE (no PTFE)	- HDPE Soil Jar
EWHEQ-SS19 0-0.1	- HDPE (no PTFE)	- HDPE Soil Jar
FR-SS10 0-0.1	- HDPE (no PTFE)	- HDPE Soil Jar
FR-TP12 0.4-0.5	- HDPE (no PTFE)	- HDPE Soil Jar

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	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EN60-DIa Deionised Water Leach	SOIL - EP231X (TOP) (solids) PFAS - Total Oxidisable Precursor (TOP) Assay	SOIL - EP231X-LL PFAS - Full Suite Low Level (28 analytes)
ES1727434-001	18-Oct-2017 00:00	AP-SS02 0-0.1	✖		✖	
ES1727434-002	18-Oct-2017 00:00	AP-SS03 0-0.1		✖		✖
ES1727434-003	19-Oct-2017 00:00	AHEQ-SS15 0-0.1	✖		✖	
ES1727434-004	19-Oct-2017 00:00	AHEQ-SS12 0-0.1		✖		✖
ES1727434-005	19-Oct-2017 00:00	EWHEQ-SS19 0-0.1	✖		✖	
ES1727434-006	18-Oct-2017 00:00	FR-SS08 0-0.1		✖		✖
ES1727434-007	19-Oct-2017 00:00	EWHEQ-SS16 0-0.1		✖		✖
ES1727434-008	18-Oct-2017 00:00	FR-SS10 0-0.1	✖		✖	
ES1727434-009	18-Oct-2017 00:00	FR-TP12 0.4-0.5	✖		✖	
ES1727434-010	18-Oct-2017 00:00	FR-TP12 0.1-0.2		✖		✖

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 Date	Samples Received Evaluation	Instructions Received Date	Instructions Received Evaluation
EA055: Moisture Content							
AP-SS02	HDPE (no PTFE)	----	01-Nov-2017	02-Nov-2017	✓	----	----
FR-SS10	HDPE (no PTFE)	----	01-Nov-2017	02-Nov-2017	✓	----	----
FR-TP12	HDPE (no PTFE)	----	01-Nov-2017	02-Nov-2017	✓	----	----
EN60-DIa: Deionised Water Leach							
AP-SS03	Non-Volatile Leach: 14 day HT(e	01-Nov-2017	----	02-Nov-2017	✓	----	----
FR-SS08	Non-Volatile Leach: 14 day HT(e	01-Nov-2017	----	02-Nov-2017	✓	----	----
FR-TP12	Non-Volatile Leach: 14 day HT(e	01-Nov-2017	----	02-Nov-2017	✓	----	----

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au_accountspayable@golder.com.au

ACCOUNTS PAYABLE (au)

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

EMMA CORNISH

- *AU Certificate of Analysis - NATA (COA)	Email	ecornish@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	ecornish@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	ecornish@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	ecornish@golder.com.au
- Chain of Custody (CoC) (COC)	Email	ecornish@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	ecornish@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	ecornish@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	ecornish@golder.com.au

IWAN OWEN

- *AU Certificate of Analysis - NATA (COA)	Email	iowen@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	iowen@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	iowen@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	iowen@golder.com.au
- Chain of Custody (CoC) (COC)	Email	iowen@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	iowen@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	iowen@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	iowen@golder.com.au