Appendix J

Laboratory Analytical Reports

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1833769**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: james.peachey@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Facsimile	: +61 07 3553 2050	Facsimile	: +61-2-8784 8500
Project	: 60588844	Page	: 1 of 2
Order number	: 60588844	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project SAM		
Sampler	: LUKE MCIVER		

Dates

Date Samples Received	: 13-Nov-2018 09:00	Issue Date	: 14-Nov-2018
Client Requested Due Date	: 16-Nov-2018	Scheduled Reporting Date	: **16-Nov-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 20.9' C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please 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	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
ES1833769-001	09-Nov-2018 00:00	SA37_181109	✓

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1833769**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 13-Nov-2018 09:00
Order number	: 60588844	Date Analysis Commenced	: 15-Nov-2018
C-O-C number	: ----	Issue Date	: 16-Nov-2018 12:32
Sampler	: LUKE MCIVER		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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.

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.

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.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				SA37_181109	----	----	----	----
				09-Nov-2018 00:00	----	----	----	----
				ES1833769-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0008**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0010**	----	----	----	----
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	<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				SA37_181109	----	----	----	----
				09-Nov-2018 00:00	----	----	----	----
				ES1833769-001	--------	--------	--------	--------
				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	**0.0018**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0018**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0018**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**93.9**	----	----	----	----
13C8-PFOA	----	0.0005	%	**109**	----	----	----	----

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1833769**	Page	: 1 of 6
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 13-Nov-2018
Order number	: 60588844	Date Analysis Commenced	: 15-Nov-2018
C-O-C number	: ----	Issue Date	: 16-Nov-2018
Sampler	: LUKE MCIVER		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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

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.

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: 2037914)									
EP1813107-008	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0004	<0.0003	28.6	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: 2037914)									
EP1813107-008	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	0.0010	0.0008	25.3	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

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: 2037914)									
EP1813107-008	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
		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: 2037914)									
EP1813107-008	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	0.007	0.007	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: 2037914)									
EP1813107-008	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0084	0.0078	7.41	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: 2037914)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	81.0	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	86.4	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	82.2	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	89.2	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	84.2	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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2037914)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	86.7	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	81.6	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	85.6	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	92.0	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	94.2	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	90.2	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	73.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	92.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	67.2	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	54.8	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	56.8	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2037914)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	92.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	59.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	58.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	68.9	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	80.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	58.8	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	82.2	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2037914)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	106	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	94.2	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2037914) - continued								
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.01 µg/L	87.6	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	85.6	50	130
EP231P: PFAS Sums (QCLot: 2037914)								
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: 2037914)							
EP1813107-007	Anonymous	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	77.4	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	76.6	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	90.4	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	85.4	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	93.2	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	54.2	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2037914)							
EP1813107-007	Anonymous	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	54.1	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	80.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	79.0	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	86.0	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	90.4	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	72.6	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	72.8	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	99.0	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	71.6	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	42.6	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2037914)							
EP1813107-007	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	85.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	55.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	48.9	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: 2037914) - continued							
EP1813107-007	Anonymous	EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	59.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	49.5	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	58.0	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	64.2	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2037914)							
EP1813107-007	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	99.8	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	95.8	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	75.6	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	115	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1833769**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 13-Nov-2018
Site	: Project SAM	Issue Date	: 16-Nov-2018
Sampler	: LUKE MCIVER	No. of samples received	: 1
Order number	: 60588844	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) SA37_181109	**09-Nov-2018**	**15-Nov-2018**	08-May-2019	✓	**15-Nov-2018**	08-May-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST) SA37_181109	**09-Nov-2018**	**15-Nov-2018**	08-May-2019	✓	**15-Nov-2018**	08-May-2019	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST) SA37_181109	**09-Nov-2018**	**15-Nov-2018**	08-May-2019	✓	**15-Nov-2018**	08-May-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) SA37_181109	**09-Nov-2018**	**15-Nov-2018**	08-May-2019	✓	**15-Nov-2018**	08-May-2019	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST) SA37_181109	**09-Nov-2018**	**15-Nov-2018**	08-May-2019	✓	**15-Nov-2018**	08-May-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-ST	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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 targeted to pristine environmental and drinking waters reporting 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

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AECOM

QAM/EV1-007-FM1

CONSULTANT: Aecom Aust Pty Ltd
PROJECT MANAGER (PM): James Pawley
PROJECT NUMBER & TASK CODE: 60606644
ISSUE TO REQUIRED (Date): Standard TAT
ADDRESS / OFFICE:
SITE: Mines Rest
P.O. NO.:
QUOTE NO.:
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
SAMPLER: Nick Weber
MOBILE: 0427 [illegible]
PHONE: 07 4155 0253
EMAIL REPORT TO: James.Pawley@aecom.com
ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)
Destination Laboratory: Sydney ALS

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Class	Total number	PBHs/VOC	PAHs	OPAHs	GP231X										FIELD	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or Matrix LCMS Info
1	LPE MW24_0.0-0.4	S	06/11/18		P	1														X	
2	LPE MW24_0.4-0.5	S	06/11/18		P	1														X	
3	LPE MW24_1.9-1.0	S	06/11/18		P	1														X	
4	LPE MW24_1.4-1.5	S	06/11/18		P	1				X										X	
5	LPE MW24_1.9-2.0	S	06/11/18		P	1														X	
6	LPE MW24_2.9-3.0	S	06/11/18		P	1				X										X	
7	LPE MW24_5.9-6.0	S	06/11/18		P	1														X	
8	LPE MW24_9.9-10.0	S	06/11/18		P	1														X	
9	LPE MW24_11.9-12.0	S	06/11/18		P	1														X	
10	LPE MW25_0.0-0.1	S	05/11/18		P	1														X	
11	LPE MW25_0.4-0.5	S	05/11/18		P	1														X	
12	LPE MW25_0.9-1.0	S	05/11/18		P	1														X	
13	LPE MW25_1.4-1.5	S	05/11/18		P	1														X	
14	LPE MW25_1.9-2.0	S	05/11/18		P	1				X										X	
15	LPE MW25_2.9-3.0	S	05/11/18		P	1														X	
16	LPE MW25_5.9-6.0	S	05/11/18		P	1				X										X	
17	LPE MW25_9.9-10.0	S	05/11/18		P	1														X	
18	LPE MW25_11.9-12.0	S	05/11/18		P	1														X	
19	LPE MW24_20.0-20.1	S	06/11/18		P	1														X	

RELINQUISHED BY: Name: Nick Weber Date: 13/11/18 Time: 9:30
RECEIVED BY: Name: Date: Time:
Name: Date: Time:
Or: ALS
METHOD OF SHIPMENT: Courier Note No.: Transport Co.:

Matrix: Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Bisulphate Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = VOA Vial Ascorbic Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; B = Unpreserved Bag
E = Preservative not Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag

COC Page 1 of 2

13/11/18

QAM/EV1-007-FM1
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Revision 1 June 16, 2016

Subcon / Forward Lab / Split WO
Lab / Analysis: ES1834520
Organised By / Date:
Relinquished By / Date:
Consote / Courier:
WO No:
Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES1834518

Telephone : +61-2-8784 8555

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QAANEV1-007-FM1

CONSULTANT: Arcadis Aust Pty Ltd | ADDRESS / OFFICE: | SAMPLER: Luke Mayer | Destination Laboratory: Sonic AUS

PROJECT MANAGER (PM): James Peachey | SITE: Project MAIB | MOBILE: 0434 340 482 | PHONE: 07 3554 [illegible]

PROJECT NUMBER & TASK COI: 80038844 | P.O. NO.: | EMAIL REPORT TO: James.Peachey@arcadis.com.au

RESULTS REQUIRED (Date): Standard TAT | QUOTE NO.: | ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY | COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL

Notes: e.g. Highly contaminated soil expected; High PRPD expected; Extra volume for QC or Matrix Spike required

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Total bottles	EP231X - SF	PFAS	6231X											Total
20	LPI MW26_00-0.1	S	06/11/18		P	1														X
21	LPI MW26_0.4-0.5	S	06/11/18		P	1														X
22	LPI MW26_0.9-1.0	S	06/11/18		P	1			X											
23	LPI MW26_1.4-1.5	S	06/11/18		P	1			X											
24	LPI MW26_3.9-4.0	S	06/11/18		P	1														X
25	LPI MW26_7.9-8.0	S	06/11/18		P	1														X
26	LPI MW26_11.9-12.0	S	06/11/18		P	1														X
27	LPI MW27_0.0-0.1	S	05/11/18		P	1			X											
28	LPI MW27_0.4-0.5	S	05/11/18		P	1														X
29	LPI MW27_0.9-1.0	S	05/11/18		P	1														X
30	LPI MW27_1.4-1.5	S	06/11/18		P	1			X											
31	LPI MW27_11.9-12.0	S	06/11/18		P	1														X
32	LPI MW28_0.9-1.0	S	06/11/18		P	1														X
33	LPI MW28_6.9-7.0	S	06/11/18		P	1														X
34	LPI MW28_7.9-8.0	S	06/11/18		P	1														X
35	LPI MW28_11.9-12.0	S	06/11/18		P	1														X
36	LPI MW29_0.0-0.1	S	06/11/18		P	1			X											
37	LPI MW29_0.4-0.5	S	06/11/18		P	1														X
38	LPI MW29_0.9-1.0	S	06/11/18		P	1														X

RELINQUISHED BY: Name: Luke Mayer | Date: 14/11/18 | Time: 8:15 | For: Arcadis Aust Pty Ltd

RECEIVED BY: Name: | Date: | Time: | For:

RECEIVED BY: Name: [illegible] | Date: 14/11/18 | Time: 09:20 | For: ALS

METHOD OF SHIPMENT: Your Note No: | Consignment No.:

Matrix: Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide/ Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HP = Nitric preserved (Specified Grade); SP = Sulfuric Preserved Plastic; Z = Permaclor(ed) Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag | Soil Container Codes: J = Unpreserved [illegible]

COC Page 2 of 3

14/11/18

QAANEV1-007-FM1
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Version 1 June 15 2014

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FQM

244REV-327-FM

CONSULTANT: Arcadis Aust Pty Ltd	ADDRESS / OFFICE:
PROJECT MANAGER (PM): James Peachey	SITE: Project 8AM
PROJECT NUMBER & TASK CODE: 30058844	P.O. NO.:
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:
FOR LABORATORY USE ONLY:	COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
SAMPLE TEMPERATURE: 19.4°C	

SAMPLER: Mike Hayes	Destination Laboratory
MOBILE: 0459310065	PHONE: 08 9355 1043
EMAIL REPORT TO: James.Peachey@arcadis.com.au	

ANALYSIS REQUIRED including SURROGATES (note - auto-calculated for notes to attract surcharges)

	ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Preservation	SEPTSLV-ST	PFAS	6231X.												Note
39		LPI MW29_1.4-1.5	S	07/11/18		P				X												
40		LPI MW28_1.9-2.0	S	07/11/18		P																X
41		LPI MW29_2.9-3.0	S	07/11/18		P																X
42		LPI MW28_5.9-6.0	S	07/11/18		P																X
43		LPI MW28_8.9-9.0	S	07/11/18		P																X
44		LPI MW28_11.9-12.0	S	07/11/18		P																X
45		LPI MW29_0.0-0.1	S	06/11/18		P																X
46		LPI MW29_0.4-0.5	S	06/11/18		P				X												
47		LPI MW29_0.9-1.0	S	06/11/18		P																X
48		LPI MW29_1.4-1.5	S	06/11/18		P				X												
49		LPI MW29_1.9-2.0	S	07/11/18		P																X
50		LPI MW29_2.9-3.0	S	07/11/18		P																X
51		LPI MW27_5.9-6.0	S	07/11/18		P																X
52		LPI MW27_7.9-8.0	S	07/11/18		P																X
53		LPI MW27_11.9-12.0	S	07/11/18		P																X
54		LPI MW30_0.0-0.1	S	06/11/18		P																X
55		LPI MW30_0.4-0.5	S	06/11/18		P																X
56		LPI MW22_0.9-1.0	S	08/11/18		P																X
57		LPI MW30_1.4-1.5	S	08/11/18		P				X												

RELINQUISHED BY:		RECEIVED BY:		METHOD OF SHIPMENT:
Name: Luke Hayes	Date: 12/11/18	Name:	Date:	Courier Name:
Of: Arcadis Aust Pty Ltd	Time: 07:00	Of:	Time:	Transport Co:

Bottle Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Amber Glass Preserved; V = VOA Vial Unpreserved; VS = VOA Vial Sodium Bisulphate Preserved; VH = VOA Vial HCl Preserved; VA = Ascorbic Preserved Vial SG = Sulphuric Preserved; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; E = Preservative Free Container; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; Soil Container Codes: Jar = Unpreserved Jar

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AECOM

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE	SAMPLER: Luke McGuire	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0435... PHONE: ...	Sydney ALS
PROJECT NUMBER & TASK CODE: 60588844	P.O. NO.	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Std TAT	QUOTE NO.	ANALYSIS REQUIRED	

FOR LABORATORY USE ONLY — 1946

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Analyses: EP123X-ST | PFAS | EP231 | HOLD

No.	SAMPLE ID	MATRIX	DATE	Type / Code	Total bottles	EP123X-ST	PFAS	EP231	HOLD
52	LPI MW32_19-20	S	08/11/18	P	1				X
59	LPI MW30_29-30	S	08/11/18	P	1			X	
60	LPI MW30_49-50	S	08/11/18	P	1				X
61	LPI MW30_59-60	S	08/11/18	P	1				X
62	LPI MW30_89-90	S	08/11/18	P	1				
63	EWHEQ MW..._0.0	S	09/11/18	P	1				
64	EWHEQ MW8_0.4-0.5	S	09/11/18	P	1			X	
65	EWHEQ MW08_09-10	S	09/11/18	P	1				X
66	EWHEQ MW08_14-15	S	09/11/18	P	1				X
67	EWHEQ MW08_19-20	S	09/11/18	P	1				X
68	EWHEQ MW08_29-30	S	09/11/18	P	1				X
69	EWHEQ MW08_59-60	S	09/11/18	P	1				X
70	EWHEQ MW08_79-80	S	09/11/18	P	1				
71	EWHEQ MW08_119-120	S	09/11/18	P	1				
72	EWHEQ MW09_0.0-0.1	S	09/11/18	P	1				
73	EWHEQ MW09_0.4-0.5	S	09/11/18	P	1			X	
74	EWHEQ MW09_09-10	S	09/11/18	P	1				X
75	EWHEQ MW09_14-15	S	09/11/18	P	1			X	
76	EWHEQ MW09_19-20	S	09/11/18	P	1				X

RELINQUISHED BY: Name: Luke McGuire Date: 9/11/18 Of: Aecom Aust Pty Ltd Time: 17:00

RECEIVED BY: Name: Of: Date: Time:

COC Page 1 of 3

9/11/18

ANZ

FQM - Generic Chain of Custody Form

QJANIEVI-007-FM1

CONSULTANT: Arcom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Myer	Destination Laboratory: Sydney ALS
PROJECT MANAGER (PM): James Peacher	SITE: Project SAM	MOBILE: 0454376649 PHONE: 0266554753	
PROJECT NUMBER & TASK CODE: 80588844	P.O. NO.	EMAIL REPORT TO: James.Peacher@arcom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.	ANALYSIS REQUIRED including SUITES	

FOR LABORATORY USE ONLY: COOLER SEAL (circle appropriate): Intact: Yes No N/A; SAMPLE TEMPERATURE: 19.4 C; CHILLED: Yes

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231X-ST	PFAS	EP231X	HOLD
	EWHEC MW09_2.9-3.0	S	09/11/18		P	1				X
	EWHEQ MW09_5.9-6.0	S	09/11/18		P	1				X
	EWHER MW09_8.9-9.0	S	09/11/18		P	1				X
	EWHEC MW09_11.9-12.0	S	09/11/18		P	1				X
	RWW MW06_0.0-0.1	S	09/11/18		P	1				X
	RWW MW06_0.4-0.5	S	09/11/18		P	1				X
	RWW MW06_0.9-1.0	S	09/11/18		P	1			X	
	RWW MW06_1.4-1.6	S	09/11/18		P	1				X
	RWW MW06_1.9-2.1	S	09/11/18		P	1				X
	RWW MW06_2.9-3.0	S	10/11/18		P	1				X
	RWW MW06_5.9-6.0	S	10/11/18		P	1			X	X
	RWW MW06_8.2-8.5	S	10/11/18		P	1			X	X
	RWW MW06_8.9-9.0	S	10/11/18		P	1				X
	RWW MW07_0.0-0.1	S	08/11/18		P	1				X
	RWW MW07_0.0-0.5	S	08/11/18		P	1			X	
	RWW MW07_1.4-1.5	S	08/11/18		P	1				X
	RWW MW07_2.9-3.0	S	08/11/18		P	1			X	
	RWW MW07_5.9-6.0	S	08/11/18		P	1				X
	RWW MW07_8.9-9.0	S	08/11/18		P	1				X

RELINQUISHED BY:	RECEIVED BY:	RECEIVED BY:	METHOD OF SHIPMENT:
Name: Luke Myer Date: 8/11/18	Name: Date:	Name: Date:	Con' Note No:
Of: Arcom Aust Pty Ltd Time: 07:00	Of: Time:	Of: Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; [illegible]

V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; [illegible]

F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; [illegible]

COC Page 5 of 9

QJANIEVI-007-FM1
FQM - Generic Chain of Custody Form QJANIEVI-007-FM1
Revision 1 June 15, 2016

5/11/18

ANZ

FQM - Generic Chain of Custody Form

GAANEV-OLT-F[illegible]

CONSULTANT: Hesim Aust. Pty Ltd	ADDRESS/OFFICE:
PROJECT MANAGER (PM): James Peachey	SITE: Project 888
PROJECT NUMBER & TASK CO: [illegible]	P.O. NO.:
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:
SAMPLER: [illegible]	MOBILE: [illegible] / PHONE: [illegible]
EMAIL REPORT TO: James Peachey [illegible]	Destination Laboratory: Sydney ALS

FOR LABORATORY USE ONLY: COOLER SEAL / Intact / Yes / No / N/A. SAMPLE TEMPERATURE: 19.6°C. CHILLED: No.

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES

Notes: e.g. highly contaminated samples, e.g. "High PAHs expected". Extra volume for QC or trace...One etc.

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type/Code	Total bottles	EP231X-ST	PFAS	EP231X	HOLD
	Rww MW08_0.0-0.1	S	08/11/18		P	1			X	
	Rww MW08_0.4-0.5	S	08/11/18		P	1				X
	Rww MW08_0.9-1.0	S	08/11/18		P	1			[illegible]	X
	Rww MW08_1.4-1.5	S	08/11/18		P	1				X
	Rww MW08_2.9-3.0	S	08/11/18		P	1				X
	Rww MW08_5.9-6.0	S	08/11/18		P	1				X
	Rww MW08_8.9-9.0	S	08/11/18		P	1			X	[illegible]
	Rww MW08_11.9-12.0	S	08/11/18		P	1				X
	ALF MW06_0.0-0.1	S	09/11/18		P	1				X
	ALF MW06_0.4-0.5	S	09/11/18		P	1			X	
	ALF MW06_0.9-1.0	S	09/11/18		P	1				X
	ALF MW06_1.4-1.5	S	09/11/18		P	1			X	
	ALF MW06_1.9-2.0	S	09/11/18		P	1				X
	ALF MW06_2.9-3.0	S	10/11/18		P	1				X
	ALF MW06_5.9-6.0	S	10/11/18		P	1				X
	ALF MW06_6.4-6.5	S	10/11/18		P	1				X
	ALF MW06_8.9-9.0	S	10/11/18		P	1				X
	ALF MW06_11.9-12.0	S	10/11/18		P	1				X
	ALF MW07_0.0-0.1	S	10/11/18		P	1				X

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Name: Luke Bickel / Date: 13/11/18	Name: / Date:	Name: [illegible] / Date: [illegible]	Cool Non [illegible]
Of: Hesim Aust Pty Ltd / Time: 07.00	Of: / Time:	Of: [illegible] / Time: [illegible]	[illegible]

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; [illegible]

V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; [illegible]

F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

COC Page 1 of 1

ANZ

FQM - Generic Chain of Custody Form

FQM

QHAREV3-007-FM1

CONSULTANT: Arcom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Mayor	Destination Laboratory
PROJECT MANAGER (PM): James P[illegible]	SITE: Project [illegible]	MOBILE: 0434570049 PHONE: 0266554252	Sydney, ALS
PROJECT NUMBER & SUB CO: [illegible]	P.O. NO:	EMAIL REPORT TO: [illegible]	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO:	ANALYSIS REQUIRED including SUITES	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

LAB ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231X-ST	PFAS	EP231X	HOLD
	ALF MW07_0.6-0.5	S	09/11/18		P	1				
	ALF MW07_0.9-1.0	S	09/11/18		P	1			X	
	ALF MW07_1.4-1.5	S	09/11/18		P	1				
	ALF MW07_1.9-2.0	S	10/11/18		P	1				X
	ALF MW07_2.9-3.0	S	10/11/18		P	1				X
	ALF MW07_5.9-6.0	S	10/11/18		P	1				X
	ALF MW07_8.9-9.0	S	10/11/18		P	1				X
	ALF MW07_9.2-9.5	S	10/11/18		P	1				X
	ALF MW07_11.9-12.0	S	10/11/18		P	1			X	
	QC101_181105	S	05/11/18		P	1				X
	QC102_181106	S	06/11/18		P	1			X	
	QC103_181108	S	08/11/18		P	1			X	
	QC201_181105	S	05/11/18		P	1			X	
	QC202_181106	S	06/11/18		P	1			X	
	QC205_181108	S	08/11/18		P	1			X	
	QC301_181105	W	05/11/18		P	1			X	
	QC302_181106	W	06/11/18		P	1			X	
	QC303_181107	W	07/11/18		P	1			X	
	QC304_181108	W	08/11/18		P	1			X	

[illegible] Send to NMI Sydney

Please forward to secondary lab. TBA

RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:		METHOD OF SHIPMENT
Name: Luke Mayor	Date: 14/11/18	Name:	Date:	Name: [illegible]	Date: 19/11/18	Con' Note No:
Of: Arcom	Time: 07:00	Of:	Time:	Of:	Time: [illegible]	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

COC Page 1 of 3

ANZ

FQM - Generic Chain of Custody Form

AECOM

CHANEY1-COT-FRM

CONSULTANT:	Aecom Aust Pty Ltd
PROJECT MANAGER (PM)	James Peachey
PROJECT NUMBER & TASK CO:	60588644
RESULTS REQUIRED (Date):	Standard TAT
ADDRESS / OFFICE:	
SITE:	Project SAM
P.O. NO:	
QUOTE NO:	
SAMPLER:	Luke McIver
MOBILE:	[illegible]
PHONE:	
EMAIL REPORT TO:	James Peachey
Destination Laboratory	[illegible]

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ANALYSIS REQUIRED including SUITES: ~~EP231X~~ PFAS-231X

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231X	PFAS-231X	HOLD
	GC305-181109	W	09/10/18		P	1		X	
	GC301-181110	W	10/11/18		P	1		X	

RELINQUISHED BY:		RECEIVED BY:	
Name: Luke McIver	Date: 14/11/18	Name:	Date:
Of: AECOM	Time: [illegible]	Of:	Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; ... V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; ... F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

COC [illegible]

14/11/18

Page 1 of 1

CHANEY1-COT-FRM
FQM - Generic Chain of Custody Form / CHANEY1-COT-FRM
Version 1 June 15, 2018

NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:	Townsville
Company Name:	AECOM Australia Pty Ltd
Address:	Level 5 - 7-13 Tomlins Street, South Townsville, QLD 4810
Contact:	Carina Jakobi (carina.jakobi@aecom.com)
Sampler:	Luke McIver (luke.mciver@aecom.com
ABN:	
Contact email:	carina.jakobi@aecom.com

Additional email(s) for reports: james.peachey@aecom.com

Additional email(s) invoice: AP_CustomerService.ANZ@aecom.com

Job Reference : Project Sam 60588844

NMI Quote Number: Valid until:

LIMS Reference:

TURN AROUND TIME REQUESTED (Working days):

24 hrs	48 hrs	3-4	7	10	20	other (please specify)
100%	50%	25%	Standard		dioxins	
			x			

*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission

Esdat format required

NMI LAB No. (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	SAMPLE MATRIX (water / soil / biota)	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)													COMMENTS
				Hold	PFAS Extended Suite												
	QC201_181105	5/Nov/18	Soil		x												
	QC202_181106	6/Nov/18	Soil		x												
	QC203_181108	8/Nov/18	Soil		x												

Relinquished by:
Print Name:
Date & Time: / / : hrs
Signature:

Received at NMI Laboratory by:
Print Name:
Date & Time: / / hrs
Signature:

PAGE No: of PAGES

If multiple pages, ensure ALL pages are stapled together

copCoC

AINZ

FQM - Generic Chain of Custody Form

Q4AM(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Meyer	Destination Laboratory: Sydney ALS
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0424310048	PHONE: 02 8456253
PROJECT NUMBER & TASK COI 60598644	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	
[redacted]	COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		

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

ALS ID	Sample ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type/ Code	Total bottles	VPH/BTEX-ST	PFAS	HOLD
	LPI mw14_00-0.1	S	06/11/18		P	1			
	LPI mw14_04-0.5	S	06/11/18		P	1			
	LPI mw14_09-1.0	S	06/11/18		P	1			
	LPI mw14_14-1.5	S	06/11/18		P	1			
	LPI mw14_19-2.0	S	06/11/18		P	1			
	LPI mw14_29-3.0	S	06/11/18		P	1			
	LPI mw14_59-6.0	S	06/11/18		P	1			
	LPI mw14_99-10.0	S	06/11/18		P	1			
	LPI mw14_119-12.0	S	06/11/18		P	1			
	LPI mw25_00-0.1	S	05/11/18		P	1			
	LPI mw25_04-0.5	S	05/11/18		P	1			
	LPI mw25_09-1.0	S	05/11/18		P	1			
	LPI mw25_14-1.5	S	05/11/18		P	1			
	LPI mw25_19-2.0	S	05/11/18		P	1			
	LPI mw25_29-3.0	S	05/11/18		P	1			
	LPI mw25_59-6.0	S	05/11/18		P	1			
	LPI mw25_99-10.0	S	05/11/18		P	1			
	LPI mw25_119-12.0	S	05/11/18		P	1			
	LPI mw26_00-0.1	S	06/11/18		P	1			

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Meyer	Date: 13/11/18	Name:	Date:	Name:	Date:	Courier Note No:
Or: Aecom Aust Pty Ltd	Time: 07:00	Or:	Time:	Or:	Time:	Transport Co:

Matrix: Soil = Solid Plastic; W = Water Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Soil Jar; N = Nitric Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic;
V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VB = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = Hydrochloric Preserved Plastic; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Additional Comments: Send Reports to James.Peachey@aecom.com and Luke.Meyer@aecom.com

QQC Page 1 of 8

13/11/18

ANZ

FQM - Generic Chain of Custody Form

QAAN(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Mayer	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0435370048 PHONE: 0266554723	Sydney ALS
PROJECT NUMBER & TASK CO: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to select suite prices)	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EPOSIX-ST	PFAS									
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles											
	LPI MW26_00-0.1	S	06/11/18		P	1											
	LPI MW26_04-0.5	S	06/11/18		P	1											
	LPI MW26_09-1.0	S	06/11/18		P	1											
	LPI MW26_1.4-1.5	S	06/11/18		P	1											
	LPI MW26_3.9-4.0	S	06/11/18		P	1											
	LPI MW26_7.9-8.0	S	06/11/18		P	1											
	LPI MW26_11.9-12.0	S	06/11/18		P	1											
	LPI MW27_0.0-0.1	S	06/11/18		P	1											
	LPI MW27_04-0.5	S	06/11/18		P	1											
	LPI MW27_09-1.0	S	06/11/18		P	1											
	LPI MW27_1.4-1.5	S	06/11/18		P	1											
	LPI MW27_1.9-2.0	S	06/11/18		P	1											
	LPI MW27_2.9-3.0	S	06/11/18		P	1											
	LPI MW27_6.9-7.0	S	06/11/18		P	1											
	LPI MW27_8.9-9.0	S	06/11/18		P	1											
	LPI MW27_11.9-12.0	S	06/11/18		P	1											
	LPI MW28_00-0.1	S	06/11/18		P	1											
	LPI MW28_04-0.5	S	06/11/18		P	1											
	LPI MW28_09-1.0	S	06/11/18		P	1											

RELINQUISHED BY:		RECEIVED BY:									
Name: Luke Mayer	Date: 12/11/18	Name:	Date:	Name:	Date:	Name:	Date:	Name:	Date:	Name:	Date:
Of: Aecom Aust. Pty Ltd	Time: 07:00	Of:	Time:	Of:	Time:	Of:	Time:	Of:	Time:	Of:	Time:

Master Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide/ Preserved Plastic; AG = Unpreserved Amber Glass; H = Hydrochloric Preserved Plastic; HS = Hydrochloric/Methanol Preserved Vials; SP = Sodium Bisulphate Preserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; BG = Sulfuric Preserved Amber Glass; R = HCl Preserved Plastic; RS = Sulfuric Preserved Plastic; W = Nitric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; [illegible] = Filtered Sample; [illegible] = Nitric Preserved Plastic

COC Page 2 of 3

12/11/18

QAAN(EV)-007-FM1
FQM - Generic Chain of Custody Form (QAAN(EV)-007-FM1)
Revision 1 June 18, 2018

Page 1 of 1

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Arcadis Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Hayes	Destination Laboratory: Sydney ALS
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434210045 PHONE: 2625 5773	
PROJECT NUMBER & TASK COI: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@arcadis.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

ALS USE ONLY
COOLER SEAL (if applicable)
Present: Yes / No / NA
Intact: Yes / No / NA
COOLER TEMPERATURE
On Ice: Yes / No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	% ASTM SVOCs	PFAS	FOG
	LPI mw29_1.4-1.5	S	07/11/18		P	1			
	LPI mw28_1.9-2.0	S	07/11/18		P	1			
	LPI mw28_2.9-3.0	S	07/11/18		P	1			
	LPI mw28_5.9-6.0	S	07/11/18		P	1			
	LPI mw28_8.9-9.0	S	07/11/18		P	1			
	LPI mw28_11.9-12.0	S	07/11/18		P	1			
	LPI mw29_0.0-0.1	S	06/11/18		P	1			
	LPI mw29_0.4-0.5	S	06/11/18		P	1			
	LPI mw29_0.9-1.0	S	06/11/18		P	1			
	LPI mw29_1.4-1.5	S	06/11/18		P	1			
	LPI mw29_1.9-2.0	S	07/11/18		P	1			
	LPI mw29_2.9-3.0	S	07/11/18		P	1			
	LPI mw29_5.9-6.0	S	07/11/18		P	1			
	LPI mw29_7.9-8.0	S	07/11/18		P	1			
	LPI mw29_11.9-12.0	S	07/11/18		P	1			
	LPI mw30_0.0-0.1	S	08/11/18		P	1			
	LPI mw30_0.4-0.5	S	08/11/18		P	1			
	LPI mw27_0.9-1.0	S	08/11/18		P	1			
	LPI mw30_1.4-1.5	S	08/11/18		P	1			

RELINQUISHED BY:		RECEIVED BY:		SHIPMENT RELEASED:
Name: Luke Hayes	Date: 12/11/18	Name:	Date:	Date/Time:
Of: Arcadis Aust Pty Ltd	Time: 07:00	Of:	Time:	Temperature:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sulfuric Preserved Plastic; AG = Unpreserved Amber Glass; H = Hydrochloric Preserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; B = Unpreserved Amber Glass; Q = Nitric Preserved Amber Glass; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; Q = Nitric Preserved Amber Glass

COC Page 3 of 8

ANZ

FQM - Generic Chain of Custody Form

QAANZ(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McNab	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434220418 PHONE: 92665525	Sydney, ALS
PROJECT NUMBER & TASK CO: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)				CONTAINER INFORMATION		EP423M-ST	PFAS	HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles			
	LPI MW20_19-20	S	08/11/18		P	1			
	LPI MW30_29-30	S	08/11/18		P	1			
	LPI MW30_49-50	S	08/11/18		P	1			
	LPI MW30_59-60	S	08/11/18		P	1			
	LPI MW29_89-90	S	08/11/18		P	1			
	EWHEQ MW8_0.0-0.05	S	09/11/18		P	1			
	EWHEQ MW8_04-05	S	09/11/18		P	1			
	EWHEQ MW8_09-10	S	09/11/18		P	1			
	EWHEQ MW8_14-15	S	09/11/18		P	1			
	EWHEQ MW8_19-20	S	09/11/18		P	1			
	EWHEQ MW8_29-30	S	09/11/18		P	1			
	EWHEQ MW8_49-50	S	09/11/18		P	1			
	EWHEQ MW8_51-60	S	09/11/18		P	1			
	EWHEQ MW8_79-80	S	09/11/18		P	1			
	EWHEQ MW8_119-120	S	09/11/18		P	1			
	EWHEQ MW9_0.0-0.1	S	09/11/18		P	1			
	EWHEQ MW9_04-0.5	S	09/11/18		P	1			
	EWHEQ MW9_09-10	S	09/11/18		P	1			
	EWHEQ MW9_14-15	S	09/11/18		P	1			
	EWHEQ MW9_19-20	S	09/11/18						

RELINQUISHED BY:		RECEIVED BY:				Additional Information
Name: Luke McNab	Date: 14/11/18	Name:	Date:	Time:	Temp:	Cooling: Ice/Pack
Of: Aecom Aust Pty Ltd	Time: 17:00	Of:				Security: Intact/Broken

Bottle Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sulfuric Preserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; AS = Airfreight Sulfuric Preserved; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag ziplock Sterile; SB = Sleeve Brass

COC Page 1 of 3

14/11/18

ANZ

FQM - Generic Chain of Custody Form

QAANEV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Myles	Destination Laboratory: Sydney ALS
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434370045 PHONE: 0266554253	
PROJECT NUMBER & TASK CODE: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

LABORATORY USE ONLY
Custody seal on cooler (Circle appropriate): Yes / No
Received: Date: Time:
Cooler temperature:
Sample temperature:

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP231X-ST	PFAS												HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles														
	EWHEC MW9_19-30	S	09/11/18		P	1														
	EWHEC MW9_5.9-6.0	S	09/11/18		P	1														
	EWHEC MW9_8.9-9.0	S	09/11/18		P	1														
	EWHEC MW9_11.9-12.0	S	09/11/18		P	1														
	RWH MW6_0.5-0.7	S	09/11/18		P	1														
	RWH MW6_2.9-3.5	S	09/11/18		P	1														
	RWH MW6_9.0-9.10	S	09/11/18		P	1														
	RWH MW6_14-15	S	09/11/18		P	1														
	RWH MW6_19-20	S	09/11/18		P	1														
	RWH MW6_29-30	S	09/11/18		P	1														
	RWH MW6_59-60	S	09/11/18		P	1														
	RWH MW6_82-83	S	09/11/18		P	1														
	RWH MW6_89-90	S	09/11/18		P	1														
	RWH MW7_0.0-0.1	S	08/11/18		P	1														
	RWH MW7_0.0-0.5	S	08/11/18		P	1														
	RWH MW7_14-15	S	08/11/18		P	1														
	RWH MW7_29-30	S	08/11/18		P	1														
	RWH MW7_59-60	S	08/11/18		P	1														
	RWH MW7_89-90	S	08/11/18		P	1														

RELINQUISHED BY:		RECEIVED BY:	
Name: Luke Myles	Date: 9/11/18	Name:	Date:
Org: Aecom Aust Pty Ltd	Time: 07:00	Org:	Time:

Cooler Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sulfuric Preserved Plastic; HS = HCl Preserved Speciation bottle; SH = Sodium Hydroxide Preserved Speciation bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Amber Glass; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Amber Glass

Page 5 of 8

ANZ

FQM - Generic Chain of Custody Form

AECOM

QAAMEV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McVeigh	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434370065 PHONE: 0266554253	Sydney ALS
PROJECT NUMBER & TASK CODE: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

LAB USE ONLY
CONTAINER TYPE / PRESERVATION
SAMPLE TEMPERATURE
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EPA31Y-ST	PFAS									HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles											
	RWW MW08_0.0-0.1	S	08/11/18		P	1											
	RWW MW08_0.4-0.5	S	08/11/18		P	1											
	RWW MW08_0.9-1.0	S	08/11/18		P	1											
	RWW MW08_1.4-1.5	S	08/11/18		P	1											
	RWW MW08_2.9-3.0	S	08/11/18		P	1											
	RWW MW08_5.9-6.0	S	08/11/18		P	1											
	RWW MW08_8.9-9.0	S	08/11/18		P	1											
	RWW MW08_11.9-12.0	S	08/11/18		P	1											
	ALF MW06_0.0-0.1	S	09/11/18		P	1											
	ALF MW06_0.4-0.5	S	09/11/18		P	1											
	ALF MW06_0.9-1.0	S	09/11/18		P	1											
	ALF MW06_1.4-1.5	S	09/11/18		P	1											
	ALF MW06_1.9-2.0	S	09/11/18		P	1											
	ALF MW06_2.9-3.0	S	10/11/18		P	1											
	ALF MW06_5.9-6.0	S	10/11/18		P	1											
	ALF MW06_6.4-6.5	S	10/11/18		P	1											
	ALF MW06_8.9-9.0	S	10/11/18		P	1											
	ALF MW06_11.9-12.0	S	10/11/18		P	1											
	ALF MW07_0.0-0.1	S	10/11/18		P	1											

RELINQUISHED BY:		RECEIVED BY:			
Name: Luke McVeigh	Date: 12/11/18	Name:	Date:	Name:	Date:
Of: Aecom Aust Pty Ltd	Time: 9:00	Of:	Time:	Of:	Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sulfuric Preserved Plastic;
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag

Page 1 of 1

ANZ

FQM - Generic Chain of Custody Form

AECOM

O4AN(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd | ADDRESS / OFFICE:
PROJECT MANAGER (PM): James Peachey | SITE: Project SAM
PROJECT NUMBER & TASK CO: 60588844 | P.O. NO.:
RESULTS REQUIRED (Date): Standard TAT | QUOTE NO.:
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLER: Mike Mayor
MOBILE: 0434570048 | PHONE: 0266554253
EMAIL REPORT TO: James.Peachey@aecom.com
ANALYSIS REQUIRED including SUITES (note - suite codes) (must be listed to attract suite prices)

Destination Laboratory: Sydney, ALS

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Total Bottles	EDTA (1)	PFAS	
	ALF MW07_0.5-0.5	S	09/11/18		P	1			
	ALF MW07_0.9-1.0	S	09/11/18		P	1			
	ALF MW07_1.4-1.5	S	09/11/18		P	1			
	ALF MW07_1.9-2.0	S	10/11/18		P	1			
	ALF MW07_2.9-3.0	S	10/11/18		P	1			
	ALF MW07_5.9-6.0	S	10/11/18		P	1			
	ALF MW07_8.9-9.0	S	10/11/18		P	1			
	ALF MW07_9.2-9.3	S	10/11/18		P	1			
	ALF MW09_11.9-12.0	S	10/11/18		P	1			
	QC101_181105	S	05/11/18		P	1			
	QC102_181106	S	06/11/18		P	1			
	QC103_181108	S	08/11/18		P	1			
	QC201_181105	S	05/11/18		P	1			
	QC202_181106	S	06/11/18		P	1			
	QC205_181108	S	08/11/18		P	1			
	QC301_181105	W	05/11/18		P	1			
	QC302_181106	W	06/11/18		P	1			
	QC303_181107	W	07/11/18		P	1			
	QC304_181108	W	08/11/18		P	1			

RELINQUISHED BY: Name: Mike Mayor | Date: 14/11/18 | Time: 07:00 | Of: Aecom
RECEIVED BY: Name: | Date: | Time: | Of:
RECEIVED BY: Name: | Date: | Time: | Of:
LABORATORY: On Receipt | Transported @ °C

Matrix: Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AV = Air Vol = Unpreserved Vial SG = Sulfuric Preserved Amber Glass; B = HCl Preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sodium Thiosulphate Preserved; V = Unpreserved Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Sample Receipt Notification: (lab use only)

Page 1 of 8

ANZ

Q4AN(EV)-007-FM1

FQM - Generic Chain of Custody Form

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Mike Mayer	Destination Laboratory: Eurofins ALS
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0423370042 PHONE	
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Total bottles	EP231XST	PFAS	HOLD
	QC305_18109	W	09/10/18		P	1			
	QC305_18110	W	10/11/18		P	1			

RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:	
Name: Mike Mayer	Date: 14/11/18	Name:	Date:	Name:	Date:
Of: Aecom	Time: 07:30	Of:	Time:	Of:	Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; [illegible]

V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; [illegible]

F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Meyer	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434370648 PHONE: 02 66554253	Sydney ALS
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	XF231X-ST	PFAS	HOLD
1	LPI MW24_0.0-0.4	S	06/11/18		P	1			
2	LPI MW24_0.4-0.5	S	06/11/18		P	1			
3	LPI MW24_0.9-1.0	S	06/11/18		P	1			
4	LPI MW24_1.4-1.5	S	06/11/18		P	1			
5	LPI MW24_1.9-2.0	S	06/11/18		P	1			
6	LPI MW24_2.9-3.0	S	06/11/18		P	1			
7	LPI MW24_5.9-6.0	S	06/11/18		P	1			
8	LPI MW24_9.9-10.0	S	06/11/18		P	1			
9	LPI MW24_11.9-12.0	S	06/11/18		P	1			
10	LPI MW25_0.0-0.1	S	05/11/18		P	1			
11	LPI MW25_0.4-0.5	S	05/11/18		P	1			
12	LPI MW25_0.9-1.0	S	05/11/18		P	1			
13	LPI MW25_1.4-1.5	S	05/11/18		P	1			
14	LPI MW25_1.9-2.0	S	05/11/18		P	1			
15	LPI MW25_2.9-3.0	S	05/11/18		P	1			
16	LPI MW25_5.9-6.0	S	05/11/18		P	1			
17	LPI MW25_9.9-10.0	S	05/11/18		P	1			
18	LPI MW25_11.9-12.0	S	05/11/18		P	1			
19	LPI MW26_0.0-0.1	S	06/11/18		P	1			

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Meyer	Date: 12/11/18	Name: Rasika	Date: 19.11.18	Name:	Date:	Con' Note No:
Of: Aecom Aust Pty Ltd	Time: 07:00	Of: ALS	Time: 9:40	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 1 of 8

13/11/18

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Aecom Aust. Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Mayer	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434370048 PHONE: 0266554253	Sydney ALS
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP251X-ST	PFAS										HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
20	LPI MW26_0.0-0.1	S	06/11/18		P	1												
21	LPI MW26_0.4-0.5	S	06/11/18		P	1												
22	LPI MW26_0.9-1.0	S	06/11/18		P	1												
23	LPI MW26_1.4-1.5	S	06/11/18		P	1												
24	LPI MW26_5.9-6.0	S	07/11/18		P	1												
25	LPI MW26_7.9-8.0	S	07/11/18		P	1												
26	LPI MW26_11.9-12.0	S	07/11/18		P	1												
27	LPI MW27_0.0-0.1	S	05/11/18		P	1												
28	LPI MW27_0.4-0.5	S	05/11/18		P	1												
29	LPI MW27_0.9-1.0	S	05/11/18		P	1												
30	LPI MW27_1.4-1.5	S	06/11/18		P	1												
31	LPI MW27_1.9-2.0	S	06/11/18		P	1												
32	LPI MW28_2.9-3.0	S	06/11/18		P	1												
33	LPI MW27_6.9-7.0	S	06/11/18		P	1												
34	LPI MW27_8.9-9.0	S	06/11/18		P	1												
35	LPI MW27_11.9-12.0	S	06/11/18		P	1												
36	LPI MW28_0.0-0.1	S	06/11/18		P	1												
37	LPI MW28_0.4-0.5	S	06/11/18		P	1												
38	LPI MW28_0.9-1.0	S	06/11/18		P	1												

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Mayer	Date: 13/11/18	Name: Rasika	Date: 19.11.18	Name:	Date:	Con' Note No:
Of: Aecom Aust. Pty Ltd	Time: 07:00	Of: ALS	Time: 9:10	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

13/11/18

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Arcadis Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Myers	**Destination Laboratory**
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434370048 PHONE: 0266554253	Sydney ALS
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@arcadis.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		*EP231X-ST	PFAS										HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
39	LPI MW28_1.4-1.5	S	07/11/18		P	1												
40	LPI MW28_1.9-2.0	S	07/11/18		P	1												
41	LPI MW28_2.9-3.0	S	07/11/18		P	1												
42	LPI MW28_5.9-6.0	S	07/11/18		P	1												
43	LPI MW28_8.9-9.0	S	07/11/18		P	1												
44	LPI MW28_11.9-12.0	S	07/11/18		P	1												
45	LPI MW29_0.0-0.1	S	06/11/18		P	1												
46	LPI MW29_0.4-0.5	S	06/11/18		P	1												
47	LPI MW29_0.9-1.0	S	06/11/18		P	1												
48	LPI MW29_1.4-1.5	S	06/11/18		P	1												
49	LPI MW29_1.9-2.0	S	07/11/18		P	1												
50	LPI MW29_2.9-3.0	S	07/11/18		P	1												
51	LPI MW29_5.9-6.0	S	07/11/18		P	1												
52	LPI MW29_7.9-8.0	S	07/11/18		P	1												
53	LPI MW29_11.9-12.0	S	07/11/18		P	1												
54	LPI MW30_0.0-0.1	S	08/11/18		P	1												
55	LPI MW30_0.4-0.5	S	08/11/18		P	1												
56	LPI MW30_0.9-1.0	S	08/11/18		P	1												
57	LPI MW30_1.4-1.5	S	08/11/18		P	1												

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Myers	Date: 13/11/18	Name: Rasika	Date: 14-11-18	Name:	Date:	Con' Note No:
Of: Arcadis Aust Pty Ltd	Time: 07:00	Of: ALS	Time: 9:10	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

13/11/18

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Meyer	**Destination Laboratory**
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434320648 PHONE: 0266554253	Sydney ALS
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP423X-ST	PFAS											HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles													
58	LPI MW30_1.9-2.0	S	08/11/18		P	1													
59	LPI MW30_2.9-3.0	S	08/11/18		P	1													
60	LPI MW30_4.9-5.0	S	08/11/18		P	1													
61	LPI MW30_8.9-6.0	S	08/11/18		P	1													
62	LPI MW30_8.9-9.0	S	08/11/18		P	1													
63	~~EWHEQ~~EWHEQ_MW08_0.0-0.1	S	09/11/18		P	1													
64	EWHEQ MW08_0.4-0.5	S	09/11/18		P	1													
65	EWHEQ MW08_0.9-1.0	S	09/11/18		P	1													
66	EWHEQ MW08_1.4-1.5	S	09/11/18		P	1													
67	EWHEQ MW08_1.9-2.0	S	09/11/18		P	1													
68	EWHEQ MW08_2.9-3.0	S	09/11/18		P	1													
69	EWHEQ MW08_5.9-6.0	S	09/11/18		P	1													
70	EWHEQ MW08_7.9-8.0	S	09/11/18		P	1													
71	EWHEQ MW08_11.9-12.0	S	09/11/18		P	1													
72	EWHEQ MW09_0.0-0.1	S	09/11/18		P	1													
73	EWHEQ MW09_0.4-0.5	S	09/11/18		P	1													
74	EWHEQ MW09_0.9-1.0	S	09/11/18		P	1													
75	EWHEQ MW09_1.4-1.5	S	09/11/18		P	1													
76	EWHEQ MW09_1.9-2.0	S	09/11/18																

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Meyer	Date: 13/11/18	Name: Rozika	Date: 19-11-18	Name:	Date:	Con' Note No:
Of: Aecom Aust Pty Ltd	Time: 17:00	Of: AUS	Time: 9:10	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 4 of 8

13/11/18

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Arcom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Mayer	**Destination Laboratory**
PROJECT MANAGER (PM): **James Peachey**	SITE: **Project SAM**	MOBILE: 0434370048 PHONE: 0266554253	Sydney ALS
PROJECT NUMBER & TASK COI **60588844**	P.O. NO.:	EMAIL REPORT TO: James.Peachey@arcom.com.au	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP231x-ST	PFAS										HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												
77	EWHEQ MW09_2.9-3.0	S	09/11/18		P	1												
78	EWHEQ MW09_5.9-6.0	S	09/11/18		P	1												
79	EWHEQ MW09_8.9-9.0	S	09/11/18		P	1												
80	EWHEQ MW09_11.9-12.0	S	09/11/18		P	1												
81	RWW MW06_0.0-0.1	S	09/11/18		P	1												
82	RWW MW06_0.4-0.5	S	09/11/18		P	1												
83	RWW MW06_0.9-1.0	S	09/11/18		P	1												
84	RWW MW06_1.4-1.6	S	09/11/18		P	1												
85	RWW MW06_1.9-2.0	S	09/11/18		P	1												
86	RWW MW06_2.9-3.0	S	10/11/18		P	1												
87	RWW MW06_3.9-4.0	S	10/11/18		P	1												
88	RWW MW06_8.2-8.3	S	10/11/18		P	1												
89	RWW MW06_8.9-9.0	S	10/11/18		P	1												
90	RWW MW07_0.0-0.1	S	08/11/18		P	1												
91	RWW MW07_0.4-0.5	S	08/11/18		P	1												
92	RWW MW07_1.4-1.5	S	08/11/18		P	1												
93	RWW MW07_2.9-3.0	S	08/11/18		P	1												
94	RWW MW07_5.9-6.0	S	08/11/18		P	1												
95	RWW MW07_8.9-9.0	S	08/11/18		P	1												

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Mayer	Date: 13/11/18	Name: Rasika	Date: 14.11.18	Name:	Date:	Con' Note No:
Of: Arcom Aust Pty Ltd	Time: 07:00	Of: ALS	Time: 9.10	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 5 of 8

13/11/18

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Aecom Aust. Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Mayer	**Destination Laboratory**
PROJECT MANAGER (PM): **James Peachey**	SITE: **Project SAM**	MOBILE: 0434370048 PHONE: 02 66554253	Sydney ALS
PROJECT NUMBER & TASK COI **60588844**	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP231x-ST	PFAS									HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles											
96	RWW MW08_0.0-0.1	S	08/11/18		P	1											
97	RWW MW08_0.4-0.5	S	08/11/18		P	1											
98	RWW MW08_0.9-1.0	S	08/11/18		P	1											
99	RWW MW08_1.4-1.5	S	08/11/18		P	1											
101	RWW MW08_2.9-3.0	S	08/11/18		P	1											
101	RWW MW08_5.9-6.0	S	08/11/18		P	1											
102	RWW MW08_8.9-9.0	S	08/11/18		P	1											
103	RWW MW08_11.9-12.0	S	08/11/18		P	1											
104	ALF MW06_0.0-0.1	S	09/11/18		P	1											
105	ALF MW06_0.4-0.5	S	09/11/18		P	1											
106	ALF MW06_0.9-1.0	S	09/11/18		P	1											
107	ALF MW06_1.4-1.5	S	09/11/18		P	1											
108	ALF MW06_1.9-2.0	S	10/11/18		P	1											
109	ALF MW06_2.9-3.0	S	10/11/18		P	1											
110	ALF MW06_5.9-6.0	S	10/11/18		P	1											
111	ALF MW06_6.4-6.5	S	10/11/18		P	1											
112	ALF MW06_8.9-9.0	S	10/11/18		P	1											
113	ALF MW06_11.9-12.0	S	10/11/18		P	1											
114	ALF MW07_0.0-0.1	S	10/11/18		P	1											

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Mayer	Date: 12/11/18	Name: Raisha	Date: 13-11-18	Name:	Date:	Con' Note No:
Of: Aecom Aust. Pty Ltd	Time: 07:00	Of: ALS	Time: 9:00	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 6 of 7

13/11/18

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McVey	**Destination Laboratory**
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434370048	PHONE: 0266554253
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: ~~To~~ James.Peachey@aecom.com	Sydney ALS
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231x-ST	PFAS	HOLD
115	ALF MW07_0.4-0.5	S	09/11/18		P	1			
116	ALF MW07_0.9-1.0	S	09/11/18		P	1			
117	ALF MW07_1.4-1.5	S	09/11/18		P	1			
118	ALF MW07_1.9-2.0	S	10/11/18		P	1			
119	ALF MW07_2.9-3.0	S	10/11/18		P	1			
120	ALF MW07_5.9-6.0	S	10/11/18		P	1			
121	ALF MW07_8.9-9.0	S	10/11/18		P	1			
122	ALF MW07_9.2-9.3	S	10/11/18		P	1			
123	ALF MW09_11.9-12.0	S	10/11/18		P	1			
124	QC101_181105	S	05/11/18		P	1			
125	QC102_181106	S	06/11/18		P	1			# Please forward to Secondary lab
126	QC103_181108	S	08/11/18		P	1			
—	QC201_181105	S	05/11/18		P	1			# Please forward to Secondary lab
—	QC202_181106	S	06/11/18		P	1			# Please forward to Secondary lab
—	QC203_181108	S	08/11/18		P	1			# TBA
127	QC301_181105	W	05/11/18		P	1			
128	QC302_181106	W	06/11/18		P	1			
129	QC303_181107	W	07/11/18		P	1			
130	QC304_181108	W	08/11/18		P	1			

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke McVey	Date: 14/11/18	Name: Rania	Date: 19-11-18	Name:	Date:	Con' Note No:
Of: Aecom	Time: 07:00	Of: ALS	Time: 9:10	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	**Destination Laboratory**
PROJECT MANAGER (PM): **James Peachey**	SITE: **Project SAM**	MOBILE: 0434370046 PHONE:	Sydney ALS
PROJECT NUMBER & TASK COI **60588844**	P.O. NO.:	EMAIL REPORT TO: James.Peachey	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP231X-ST											HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		ALS										
131	QC305-181109	W	09/10/18		P	1												
132	QC306-181110	W	10/11/18		P	1												

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke McIver	Date: 14/11/18	Name: Ragika	Date: 14-11-18	Name:	Date:	Con' Note No:
Of: Aecom	Time: 09:00	Of: ALS	Time: 9:10	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 8 of 10

14/11/18

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1834518**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: james.peachey@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Facsimile	: +61 07 3553 2050	Facsimile	: +61-2-8784 8500
Project	: 60588844	Page	: 1 of 4
Order number	:	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project SAM		
Sampler	: LUKE MCIVER		

Dates

Date Samples Received	: 19-Nov-2018 09:20	Issue Date	: 23-Nov-2018
Client Requested Due Date	: 27-Nov-2018	Scheduled Reporting Date	: **27-Nov-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 19.4 - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 75 / 18

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
- 23/11/18: This is an updated SRN which indicates the updated PFAS analysis for smaple on page 4 of the COC
- **The sample ID LPI_MW26_0.0-0.1 was written twice on the COC as samples 19 and 20.**
- **This workorder has been split into ES1834520 due to large number of samples.**
- **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: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1834518-001	06-Nov-2018 00:00	LPI_MW24_0.0-0.1	☐		
ES1834518-002	06-Nov-2018 00:00	LPI_MW24_0.4-0.5	☐		
ES1834518-003	06-Nov-2018 00:00	LPI_MW24_0.9-1.0	☐		
ES1834518-004	06-Nov-2018 00:00	LPI_MW24_1.4-1.5		☐	☐
ES1834518-005	06-Nov-2018 00:00	LPI_MW24_1.9-2.0	☐		
ES1834518-006	06-Nov-2018 00:00	LPI_MW24_2.9-3.0		☐	☐
ES1834518-007	06-Nov-2018 00:00	LPI_MW24_5.9-6.0	☐		
ES1834518-008	06-Nov-2018 00:00	LPI_MW24_9.9-10.0	☐		
ES1834518-009	06-Nov-2018 00:00	LPI_MW24_11.9-12.0	☐		
ES1834518-010	05-Nov-2018 00:00	LPI_MW25_0.0-0.1	☐		
ES1834518-011	05-Nov-2018 00:00	LPI_MW25_0.4-0.5	☐		
ES1834518-012	05-Nov-2018 00:00	LPI_MW25_0.9-1.0	☐		
ES1834518-013	05-Nov-2018 00:00	LPI_MW25_1.4-1.5	☐		
ES1834518-014	05-Nov-2018 00:00	LPI_MW25_1.9-2.0		☐	☐
ES1834518-015	05-Nov-2018 00:00	LPI_MW25_2.9-3.0	☐		
ES1834518-016	05-Nov-2018 00:00	LPI_MW25_5.9-6.0		☐	☐
ES1834518-017	05-Nov-2018 00:00	LPI_MW25_9.9-10.0	☐		
ES1834518-018	05-Nov-2018 00:00	LPI_MW25_11.9-12.0	☐		
ES1834518-019	06-Nov-2018 00:00	LPI_MW26_0.0-0.1	☐		
ES1834518-021	06-Nov-2018 00:00	LPI_MW26_0.4-0.5	☐		
ES1834518-022	06-Nov-2018 00:00	LPI_MW26_0.9-1.0		☐	☐
ES1834518-023	06-Nov-2018 00:00	LPI_MW26_1.4-1.5		☐	☐
ES1834518-024	07-Nov-2018 00:00	LPI_MW26_5.9-6.0	☐		
ES1834518-025	07-Nov-2018 00:00	LPI_MW26_7.9-8.0	☐		
ES1834518-026	07-Nov-2018 00:00	LPI_MW26_11.9-12.0	☐		
ES1834518-027	05-Nov-2018 00:00	LPI_MW27_0.0-0.1		☐	☐
ES1834518-028	05-Nov-2018 00:00	LPI_MW27_0.4-0.5	☐		
ES1834518-029	05-Nov-2018 00:00	LPI_MW27_0.9-1.0	☐		
ES1834518-030	06-Nov-2018 00:00	LPI_MW27_1.4-1.5		☐	☐
ES1834518-031	06-Nov-2018 00:00	LPI_MW27_1.9-2.0	☐		
ES1834518-032	06-Nov-2018 00:00	LPI_MW27_2.9-3.0	☐		
ES1834518-033	06-Nov-2018 00:00	LPI_MW27_6.9-7.0	☐		
ES1834518-034	06-Nov-2018 00:00	LPI_MW27_8.9-9.0	☐		
ES1834518-035	06-Nov-2018 00:00	LPI_MW27_11.9-12.0	☐		
ES1834518-036	06-Nov-2018 00:00	LPI_MW28_0.0-0.1		☐	☐

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1834518-037	06-Nov-2018 00:00	LPI_MW28_0.4-0.5	☐		
ES1834518-038	06-Nov-2018 00:00	LPI_MW28_0.9-1.0	☐		
ES1834518-039	07-Nov-2018 00:00	LPI_MW28_1.4-1.5		☐	☐
ES1834518-040	07-Nov-2018 00:00	LPI_MW28_1.9-2.0	☐		
ES1834518-041	07-Nov-2018 00:00	LPI_MW28_2.9-3.0	☐		
ES1834518-042	07-Nov-2018 00:00	LPI_MW28_5.9-6.0	☐		
ES1834518-043	07-Nov-2018 00:00	LPI_MW28_8.9-9.0	☐		
ES1834518-044	07-Nov-2018 00:00	LPI_MW28_11.9-12.0	☐		
ES1834518-045	06-Nov-2018 00:00	LPI_MW29_0.0-0.1	☐		
ES1834518-046	06-Nov-2018 00:00	LPI_MW29_0.4-0.5		☐	☐
ES1834518-047	06-Nov-2018 00:00	LPI_MW29_0.9-1.0	☐		
ES1834518-048	06-Nov-2018 00:00	LPI_MW29_1.4-1.5		☐	☐
ES1834518-049	07-Nov-2018 00:00	LPI_MW29_1.9-2.0	☐		
ES1834518-050	07-Nov-2018 00:00	LPI_MW29_2.9-3.0	☐		
ES1834518-051	07-Nov-2018 00:00	LPI_MW29_5.9-6.0	☐		
ES1834518-052	07-Nov-2018 00:00	LPI_MW29_7.9-8.0	☐		
ES1834518-053	07-Nov-2018 00:00	LPI_MW29_11.9-12.0	☐		
ES1834518-054	08-Nov-2018 00:00	LPI_MW30_0.0-0.1	☐		
ES1834518-055	08-Nov-2018 00:00	LPI_MW30_0.4-0.5	☐		
ES1834518-056	08-Nov-2018 00:00	LPI_MW30_0.9-1.0	☐		
ES1834518-057	08-Nov-2018 00:00	LPI_MW30_1.4-1.5		☐	☐
ES1834518-058	08-Nov-2018 00:00	LPI_MW30_1.9-2.0	☐		
ES1834518-059	08-Nov-2018 00:00	LPI_MW30_2.9-3.0		☐	☐
ES1834518-060	08-Nov-2018 00:00	LPI_MW30_4.7-5.0	☐		
ES1834518-061	08-Nov-2018 00:00	LPI_MW30_5.9-6.0	☐		
ES1834518-062	08-Nov-2018 00:00	LPI_MW30_8.9-9.0	☐		
ES1834518-063	09-Nov-2018 00:00	EWHEQ_MW08_0.0-0.1		☐	☐
ES1834518-064	09-Nov-2018 00:00	EWHEQ_MW08_0.4-0.5	☐		
ES1834518-065	09-Nov-2018 00:00	EWHEQ_MW08_0.9-1.0		☐	☐
ES1834518-066	09-Nov-2018 00:00	EWHEQ_MW08_1.4-1.5	☐		
ES1834518-067	09-Nov-2018 00:00	EWHEQ_MW08_1.9-2.0	☐		
ES1834518-068	09-Nov-2018 00:00	EWHEQ_MW08_2.9-3.0	☐		
ES1834518-069	09-Nov-2018 00:00	EWHEQ_MW08_5.9-6.0	☐		
ES1834518-070	09-Nov-2018 00:00	EWHEQ_MW08_7.9-8.0	☐		
ES1834518-071	09-Nov-2018 00:00	EWHEQ_MW08_11.9-12.0	☐		
ES1834518-072	09-Nov-2018 00:00	EWHEQ_MW09_0.0-0.1	☐		
ES1834518-073	09-Nov-2018 00:00	EWHEQ_MW09_0.4-0.5		☐	☐
ES1834518-074	09-Nov-2018 00:00	EWHEQ_MW09_0.9-1.0	☐		
ES1834518-075	09-Nov-2018 00:00	EWHEQ_MW09_1.4-1.5		☐	☐
ES1834518-076	09-Nov-2018 00:00	EWHEQ_MW09_1.9-2.0	☐		

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1834518**	Page	: 1 of 11
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 19-Nov-2018 09:20
Order number	: 60588844	Date Analysis Commenced	: 21-Nov-2018
C-O-C number	: ----	Issue Date	: 26-Nov-2018 13:37
Sampler	: LUKE MCIVER		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 75		
No. of samples analysed	: 18		

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.

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				LPI_MW24_1.4-1.5	LPI_MW24_2.9-3.0	LPI_MW25_1.9-2.0	LPI_MW25_5.9-6.0	LPI_MW26_0.9-1.0
				06-Nov-2018 00:00	06-Nov-2018 00:00	05-Nov-2018 00:00	05-Nov-2018 00:00	06-Nov-2018 00:00
				ES1834518-004	ES1834518-006	ES1834518-014	ES1834518-016	ES1834518-022
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**14.6**	**13.6**	**8.2**	**15.8**	**17.8**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	**0.0017**	<0.0002	**0.0003**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0002**	<0.0002	**0.0013**	**0.0005**	<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	**0.0003**	<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	**0.0004**	<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)				LPI_MW24_1.4-1.5	LPI_MW24_2.9-3.0	LPI_MW25_1.9-2.0	LPI_MW25_5.9-6.0	LPI_MW26_0.9-1.0
				06-Nov-2018 00:00	06-Nov-2018 00:00	05-Nov-2018 00:00	05-Nov-2018 00:00	06-Nov-2018 00:00
				ES1834518-004	ES1834518-006	ES1834518-014	ES1834518-016	ES1834518-022
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<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	**0.0039**	**0.0005**	**0.0003**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0002**	<0.0002	**0.0030**	**0.0005**	**0.0003**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0002**	<0.0002	**0.0039**	**0.0005**	**0.0003**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**77.0**	**70.0**	**76.0**	**60.5**	**72.0**
13C8-PFOA	----	0.0002	%	**81.0**	**79.0**	**85.0**	**76.5**	**82.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				LPI_MW26_1.4-1.5	LPI_MW27_0.0-0.1	LPI_MW27_1.4-1.5	LPI_MW28_0.0-0.1	LPI_MW28_1.4-1.5
				06-Nov-2018 00:00	05-Nov-2018 00:00	06-Nov-2018 00:00	06-Nov-2018 00:00	07-Nov-2018 00:00
				ES1834518-023	ES1834518-027	ES1834518-030	ES1834518-036	ES1834518-039
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**9.6**	**2.1**	**4.0**	**2.2**	**30.3**
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	**0.0006**	**0.0030**	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	**0.0003**	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0181**	**0.102**	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	**0.0007**	<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	**0.0005**	<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	**0.0005**	<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)				LPI_MW26_1.4-1.5	LPI_MW27_0.0-0.1	LPI_MW27_1.4-1.5	LPI_MW28_0.0-0.1	LPI_MW28_1.4-1.5
				06-Nov-2018 00:00	05-Nov-2018 00:00	06-Nov-2018 00:00	06-Nov-2018 00:00	07-Nov-2018 00:00
				ES1834518-023	ES1834518-027	ES1834518-030	ES1834518-036	ES1834518-039
				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	**0.0194**	**0.106**	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	**0.0187**	**0.105**	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	**0.0187**	**0.106**	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**67.5**	**61.5**	**67.0**	**70.0**	**79.5**
13C8-PFOA	----	0.0002	%	**75.5**	**82.5**	**83.5**	**80.0**	**87.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				LPI_MW29_0.4-0.5	LPI_MW29_1.4-1.5	LPI_MW30_1.4-1.5	LPI_MW30_2.9-3.0	EWHEQ_MW08_0.0-0.1
				06-Nov-2018 00:00	06-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00	09-Nov-2018 00:00
				ES1834518-046	ES1834518-048	ES1834518-057	ES1834518-059	ES1834518-063
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**10.6**	**17.7**	**12.6**	**18.1**	**2.5**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0004**	<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)				LPI_MW29_0.4-0.5	LPI_MW29_1.4-1.5	LPI_MW30_1.4-1.5	LPI_MW30_2.9-3.0	EWHEQ_MW08_0.0-0.1
				06-Nov-2018 00:00	06-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00	09-Nov-2018 00:00
				ES1834518-046	ES1834518-048	ES1834518-057	ES1834518-059	ES1834518-063
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0004**	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0004**	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0004**	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**66.5**	**74.0**	**82.5**	**61.0**	**68.0**
13C8-PFOA	----	0.0002	%	**71.5**	**86.0**	**94.5**	**78.0**	**97.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EWHEQ_MW08_0.9-1.0	EWHEQ_MW09_0.4-0.5	EWHEQ_MW09_1.4-1.5	----	----
				09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	----	----
				ES1834518-065	ES1834518-073	ES1834518-075	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**12.2**	**14.6**	**9.8**	**----**	**----**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	**----**	**----**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	**----**	**----**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EWHEQ_MW08_0.9-1.0	EWHEQ_MW09_0.4-0.5	EWHEQ_MW09_1.4-1.5	----	----
				09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	----	----
				ES1834518-065	ES1834518-073	ES1834518-075	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<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	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**70.0**	**83.0**	**77.5**	----	----
13C8-PFOA	----	0.0002	%	**78.0**	**89.0**	**88.5**	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
		Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1834518**	Page	: 1 of 7
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 19-Nov-2018
Order number	: 60588844	Date Analysis Commenced	: 21-Nov-2018
C-O-C number	: ----	Issue Date	: 26-Nov-2018
Sampler	: LUKE MCIVER		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 75		
No. of samples analysed	: 18		

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

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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: **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: 2049570)									
ES1834434-001	Anonymous	EA055: Moisture Content	----	0.1	%	7.0	6.8	3.23	No Limit
ES1834518-004	LPI_MW24_1.4-1.5	EA055: Moisture Content	----	0.1	%	14.6	14.6	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2049571)									
ES1834518-039	LPI_MW28_1.4-1.5	EA055: Moisture Content	----	0.1	%	30.3	31.6	4.20	0% - 20%
ES1834520-017	Anonymous	EA055: Moisture Content	----	0.1	%	10.0	10.1	1.06	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2048545)									
ES1834518-004	LPI_MW24_1.4-1.5	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	0.0003	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
ES1834518-046	LPI_MW29_0.4-0.5	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	0.0004	0.0006	46.0	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: 2048545)									
ES1834518-004	LPI_MW24_1.4-1.5	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

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: 2048545) - continued									
ES1834518-004	LPI_MW24_1.4-1.5	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
ES1834518-046	LPI_MW29_0.4-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2048545)									
ES1834518-004	LPI_MW24_1.4-1.5	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
ES1834518-046	LPI_MW29_0.4-0.5	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

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: 2048545) - continued									
ES1834518-046	LPI_MW29_0.4-0.5	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: 2048545)									
ES1834518-004	LPI_MW24_1.4-1.5	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
ES1834518-046	LPI_MW29_0.4-0.5	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

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: 2048545)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.0	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.4	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2048545)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	55.3	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	68.0	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.6	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.4	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.3	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2048545)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	72.3	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.8	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	66.0	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	67.2	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2048545)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.8	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.0	62	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2048545) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.8	60	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**

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: 2048545)							
ES1834518-004	LPI_MW24_1.4-1.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	55.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	64.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	65.6	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	58.8	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	71.6	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2048545)							
ES1834518-004	LPI_MW24_1.4-1.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	50.6	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	65.6	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	67.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	71.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	67.2	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	72.4	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	66.4	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	74.8	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	68.4	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	58.4	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	79.0	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2048545)							
ES1834518-004	LPI_MW24_1.4-1.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	62.0	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	65.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	68.9	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	72.4	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	66.5	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	66.8	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: 2048545) - continued							
ES1834518-004	LPI_MW24_1.4-1.5	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	89.2	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2048545)							
ES1834518-004	LPI_MW24_1.4-1.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	80.0	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	70.4	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	67.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	68.0	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1834518**	Page	: 1 of 7
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 19-Nov-2018
Site	: Project SAM	Issue Date	: 26-Nov-2018
Sampler	: LUKE MCIVER	No. of samples received	: 75
Order number	: 60588844	No. of samples analysed	: 18

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
HDPE Soil Jar						
LPI_MW25_1.9-2.0, LPI_MW25_5.9-6.0, LPI_MW27_0.0-0.1	----	----	----	21-Nov-2018	19-Nov-2018	**2**
HDPE Soil Jar						
LPI_MW24_1.4-1.5, LPI_MW24_2.9-3.0, LPI_MW26_0.9-1.0, LPI_MW26_1.4-1.5, LPI_MW27_1.4-1.5, LPI_MW28_0.0-0.1, LPI_MW29_0.4-0.5, LPI_MW29_1.4-1.5	----	----	----	21-Nov-2018	20-Nov-2018	**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			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
LPI_MW25_1.9-2.0, LPI_MW25_5.9-6.0, LPI_MW27_0.0-0.1	**05-Nov-2018**	**----**	----	----	**21-Nov-2018**	19-Nov-2018	×
HDPE Soil Jar (EA055)							
LPI_MW24_1.4-1.5, LPI_MW24_2.9-3.0, LPI_MW26_0.9-1.0, LPI_MW26_1.4-1.5, LPI_MW27_1.4-1.5, LPI_MW28_0.0-0.1, LPI_MW29_0.4-0.5, LPI_MW29_1.4-1.5	**06-Nov-2018**	**----**	----	----	**21-Nov-2018**	20-Nov-2018	×
HDPE Soil Jar (EA055)							
LPI_MW28_1.4-1.5	**07-Nov-2018**	**----**	----	----	**21-Nov-2018**	21-Nov-2018	✓
HDPE Soil Jar (EA055)							
LPI_MW30_1.4-1.5, LPI_MW30_2.9-3.0	**08-Nov-2018**	**----**	----	----	**21-Nov-2018**	22-Nov-2018	✓
HDPE Soil Jar (EA055)							
EWHEQ_MW08_0.0-0.1, EWHEQ_MW08_0.9-1.0, EWHEQ_MW09_0.4-0.5, EWHEQ_MW09_1.4-1.5	**09-Nov-2018**	**----**	----	----	**21-Nov-2018**	23-Nov-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
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
LPI_MW25_1.9-2.0,	LPI_MW25_5.9-6.0,	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW27_0.0-0.1								
HDPE Soil Jar (EP231X)								
LPI_MW24_1.4-1.5,	LPI_MW24_2.9-3.0,	**06-Nov-2018**	**22-Nov-2018**	05-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW26_0.9-1.0,	LPI_MW26_1.4-1.5,							
LPI_MW27_1.4-1.5,	LPI_MW28_0.0-0.1,							
LPI_MW29_0.4-0.5,	LPI_MW29_1.4-1.5							
HDPE Soil Jar (EP231X)								
LPI_MW28_1.4-1.5		**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
LPI_MW30_1.4-1.5,	LPI_MW30_2.9-3.0	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
EWHEQ_MW08_0.0-0.1,	EWHEQ_MW08_0.9-1.0,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
EWHEQ_MW09_0.4-0.5,	EWHEQ_MW09_1.4-1.5							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
LPI_MW25_1.9-2.0,	LPI_MW25_5.9-6.0,	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW27_0.0-0.1								
HDPE Soil Jar (EP231X)								
LPI_MW24_1.4-1.5,	LPI_MW24_2.9-3.0,	**06-Nov-2018**	**22-Nov-2018**	05-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW26_0.9-1.0,	LPI_MW26_1.4-1.5,							
LPI_MW27_1.4-1.5,	LPI_MW28_0.0-0.1,							
LPI_MW29_0.4-0.5,	LPI_MW29_1.4-1.5							
HDPE Soil Jar (EP231X)								
LPI_MW28_1.4-1.5		**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
LPI_MW30_1.4-1.5,	LPI_MW30_2.9-3.0	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
EWHEQ_MW08_0.0-0.1,	EWHEQ_MW08_0.9-1.0,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
EWHEQ_MW09_0.4-0.5,	EWHEQ_MW09_1.4-1.5							

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)								
LPI_MW25_1.9-2.0,	LPI_MW25_5.9-6.0,	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW27_0.0-0.1								
HDPE Soil Jar (EP231X)								
LPI_MW24_1.4-1.5,	LPI_MW24_2.9-3.0,	**06-Nov-2018**	**22-Nov-2018**	05-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW26_0.9-1.0,	LPI_MW26_1.4-1.5,							
LPI_MW27_1.4-1.5,	LPI_MW28_0.0-0.1,							
LPI_MW29_0.4-0.5,	LPI_MW29_1.4-1.5							
HDPE Soil Jar (EP231X)								
LPI_MW28_1.4-1.5		**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
LPI_MW30_1.4-1.5,	LPI_MW30_2.9-3.0	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
EWHEQ_MW08_0.0-0.1,	EWHEQ_MW08_0.9-1.0,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
EWHEQ_MW09_0.4-0.5,	EWHEQ_MW09_1.4-1.5							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
LPI_MW25_1.9-2.0,	LPI_MW25_5.9-6.0,	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW27_0.0-0.1								
HDPE Soil Jar (EP231X)								
LPI_MW24_1.4-1.5,	LPI_MW24_2.9-3.0,	**06-Nov-2018**	**22-Nov-2018**	05-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
LPI_MW26_0.9-1.0,	LPI_MW26_1.4-1.5,							
LPI_MW27_1.4-1.5,	LPI_MW28_0.0-0.1,							
LPI_MW29_0.4-0.5,	LPI_MW29_1.4-1.5							
HDPE Soil Jar (EP231X)								
LPI_MW28_1.4-1.5		**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
LPI_MW30_1.4-1.5,	LPI_MW30_2.9-3.0	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
EWHEQ_MW08_0.0-0.1,	EWHEQ_MW08_0.9-1.0,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
EWHEQ_MW09_0.4-0.5,	EWHEQ_MW09_1.4-1.5							

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) LPI_MW25_1.9-2.0, LPI_MW25_5.9-6.0, LPI_MW27_0.0-0.1	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X) LPI_MW24_1.4-1.5, LPI_MW24_2.9-3.0, LPI_MW26_0.9-1.0, LPI_MW26_1.4-1.5, LPI_MW27_1.4-1.5, LPI_MW28_0.0-0.1, LPI_MW29_0.4-0.5, LPI_MW29_1.4-1.5	**06-Nov-2018**	**22-Nov-2018**	05-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X) LPI_MW28_1.4-1.5	**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X) LPI_MW30_1.4-1.5, LPI_MW30_2.9-3.0	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X) EWHEQ_MW08_0.0-0.1, EWHEQ_MW08_0.9-1.0, EWHEQ_MW09_0.4-0.5, EWHEQ_MW09_1.4-1.5	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-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: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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. 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
Sample Extraction for PFAS	EP231-PR	SOIL	In house

AECOM

ANZ

FQM - Generic Chain of Custody Form

AECOM

CONSULTANT: Aecom Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Meyer	Destination Laboratory: Eurofins ALS
PROJECT MANAGER (PM): James Peachey	SITE: Preston BAR	MOBILE: 0429451048 PHONE: 02 4352 5253	
PROJECT NUMBER & TASK CO: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite price)	

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate): Present / Broken / None

TEMPERATURE: 19.4 °C

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Total bottles	TRH/BTEX/ST	PFAS	PFAS - 6:2 FTS	HOLD	Notes: e.g. Highly contaminated sample / e.g. "High PAHs expected" (Extra volume for QC or Intra-Lab QC)
	LPI MW24_0.0-0.4	S	06/11/18		P	1				X	
	LPI MW24_0.4-0.5	S	06/11/18		P	1				X	
	LPI MW24_0.9-1.0	S	06/11/18		P	1				X	
	LPI MW24_1.4-1.5	S	06/11/18		P	1			X		
	LPI MW24_1.9-2.0	S	06/11/18		P	1				X	
	LPI MW24_2.9-3.0	S	06/11/18		P	1			X		
	LPI MW24_5.9-6.0	S	06/11/18		P	1				X	
	LPI MW24_9.9-10.0	S	06/11/18		P	1				X	
	LPI MW24_11.9-12.0	S	06/11/18		P	1				X	
	LPI MW25_0.0-0.1	S	05/11/18		P	1				X	
	LPI MW25_0.4-0.5	S	05/11/18		P	1				X	
	LPI MW25_0.9-1.0	S	05/11/18		P	1				X	
	LPI MW25_1.4-1.5	S	05/11/18		P	1				X	
	LPI MW25_1.9-2.0	S	05/11/18		P	1			X		
	LPI MW25_2.9-3.0	S	05/11/18		P	1				X	
	LPI MW25_5.9-6.0	S	05/11/18		P	1			X		
	LPI MW25_9.9-10.0	S	05/11/18		P	1				X	
	LPI MW25_11.9-12.0	S	05/11/18		P	1				X	
	LPI MW26_0.0-0.1	S	06/11/18		P	1				X	

RELINQUISHED BY	RECEIVED BY	RECEIVED BY	METHOD OF SHIPMENT
Name: Luke Meyer	Name:	Name: Sophie	Consignment No:
Org: Aecom Aust Pty Ltd	Org:	Org: AU	Transport Co:
Date: 13/11/18	Date:	Date: 14/11/18	
Time: 9T CC	Time:	Time: 0930	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag

Soil Container Codes: Jar = Unpreserved plastic jar

COC Page 1 of 8

13/11/18

Subcon / Forward Lab / Split WO

Lab / Analysis: ES1834518

Organised By / Date:

Relinquished By / Date:

Connote / Courier:

WO No:

Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES1834520

Telephone : + 61-2-8784 8555

ANZ

FQM - Generic Chain of Custody Form

FQM

QMANEY-UU7-PM1

CONSULTANT: Arcadis - Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Mayer	Destination Laboratory: Synergy ALS
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434 376 643 PHONE: 08 6151 5400	
PROJECT NUMBER & TASK CO: 60588844	P.O. NO:	EMAIL REPORT TO: EMPL.Perth@arcadis.com.au	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO:	ANALYSIS REQUIRED (including SUITES) (Note - some combinations may be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate): Yes No NA
AMBIENT TEMPERATURE: 19°C
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Total bottles	EP231X-ST	PFAS	EP231X	H2O
	LPI MW26_00-01	S	06/11/18		P	1				X
	LPI MW26_04-05	S	06/11/18		P	1				X
	LPI MW26_09-10	S	06/11/18		P	1			X	
	LPI MW26_14-15	S	06/11/18		P	1			X	
	LPI MW26_39-40	S	07/11/18		P	1				X
	LPI MW26_79-80	S	07/11/18		P	1				X
	LPI MW26_119-120	S	07/11/18		P	1				X
	LPI MW27_00-01	S	05/11/18		P	1			X	
	LPI MW27_04-05	S	05/11/18		P	1				X
	LPI MW27_09-10	S	05/11/18		P	1				X
	LPI MW27_14-15	S	06/11/18		P	1			X	
	LPI MW27_19-20	S	06/11/18		P	1				X
	LPI MW27_29-30	S	06/11/18		P	1				X
	LPI MW27_69-70	S	06/11/18		P	1				X
	LPI MW27_89-90	S	06/11/18		P	1				X
	LPI MW27_119-120	S	06/11/18		P	1				X
	LPI MW28_00-01	S	06/11/18		P	1			X	
	LPI MW28_04-05	S	06/11/18		P	1				X
	LPI MW28_09-10	S	06/11/18		P	1				X

RELINQUISHED BY	RECEIVED BY	RECEIVED BY	METHOD OF SHIPMENT
Name: Luke Mayer	Name:	Name: [illegible]	Cour' Note No.
Of: Arcadis Aust Pty Ltd	Of:	Of: [illegible]	Transport Co.
Date: 13/11/18	Date:	Date: 13/11/18	
Time: 07:00	Time:	Time: 17:20	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HB = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag
Soil Container Codes: Jar = Unpreserved Jar

COC Page 2 of 3

13/11/18

ANZ

FQM - Generic Chain of Custody Form

DAANREV...

CONSULTANT: Arcadis Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Hayes	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434310045 / PHONE: [illegible]	[illegible] ALT
PROJECT NUMBER & TASK CODE: 60588844	P.O. NO.	EMAIL REPORT TO: James Peachey@arcadis.c...	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriately): Intact: (Yes) No N/A

SAMPLE TEMPERATURE: 19.4°C

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

NOTES: e.g. [illegible]; e.g. "High [illegible]"; Extra volume for QC or trace [illegible]

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231X-ST	PFAS	6P231X.											HOLD
	LPI MW29_1.4-1.5	S	07/11/18		P	1			X											
	LPI MW28_1.9-2.0	S	07/11/18		P	1														X
	LPI MW28_2.9-3.0	S	07/11/18		P	1														X
	LPI MW28_5.9-6.0	S	07/11/18		P	1														X
	LPI MW28_8.9-9.0	S	07/11/18		P	1														X
	LPI MW28_11.9-12.0	S	07/11/18		P	1														X
	LPI MW29_0.0-0.1	S	06/11/18		P	1														X
	LPI MW29_0.4-0.5	S	06/11/18		P	1			X											
	LPI MW29_0.9-1.0	S	06/11/18		P	1														X
	LPI MW29_1.4-1.5	S	06/11/18		P	1			X											
	LPI MW29_1.9-2.0	S	07/11/18		P	1														X
	LPI MW29_2.9-3.0	S	07/11/18		P	1														X
	LPI MW29_5.9-6.0	S	07/11/18		P	1														X
	LPI MW27_7.9-8.0	S	07/11/18		P	1														X
	LPI MW27_11.9-12.0	S	07/11/18		P	1														X
	LPI MW30_0.0-0.1	S	08/11/18		P	1														X
	LPI MW30_0.4-0.5	S	08/11/18		P	1														X
	LPI MW30_0.9-1.0	S	08/11/18		P	1														X
	LPI MW30_1.4-1.5	S	08/11/18		P	1			X											

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Hayes	Date: 18/11/18	Name:	Date:	Name: [illegible]	Date: 19/11/18	Con' Note No:
Of: Arcadis Aust Pty Ltd	Time: 07:00	Of:	Time:	Of: ALS	Time: 9:20	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar

19/11/18

AMZ

FQM - Generic Chain of Custody Form

DAAREV)-007-FM1

CONSULTANT: Aecom Australia Pty Ltd	ADDRESS / OFFICE	SAMPLER: Luke Hayes	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0427 [illegible] PHONE: [illegible]	Eurofins, ALS
PROJECT NUMBER & TASK CC: 60585844	P O NO	EMAIL REPORT TO: James.Peachey@aecom.com	
RESULTS REQUIRED (Date): 3 DAY TAT	QUOTE NO	ANALYSIS REQUIRED including SUITES (Note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate): Y / N / NA
SAMPLE TEMPERATURE: 19.4 C
OTHER: [illegible]

CONTAINER / PRESERVATION / STORAGE INFORMATION

SAMPLE INFORMATION (note: S = Soil, W = Water)

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP423 IX-ST	PFAS	EP231															Comments
	LPI MW3-19-20	S	08/11/18		P	1																	X	
	LPI MW3C-29-30	S	08/11/18		P	1			X															
	LPI MW3C-49-50	S	08/11/18		P	1																	X	
	LPI MW3C-89-90	S	08/11/18		P	1																	X	
	LPT MW3C-89-90	S	08/11/18		P	1																	X	
	EWHEQ MW3-29-30	S	09/11/18		P	1			X															
	EWHEQ MW3-49-50	S	09/11/18		P	1																	X	
	EWHEQ MW3B-29-30	S	09/11/18		P	1			X															
	EWHEQ MW3-14-15	S	09/11/18		P	1																	X	
	EWHEQ MW3-19-20	S	09/11/18		P	1																	X	
	EWHEQ MW3B-29-30	S	09/11/18		P	1																	X	
	EWHEQ MW3-59-60	S	09/11/18		P	1																	X	
	EWHEQ MW3-79-80	S	09/11/18		P	1																	X	
	EWHEQ MW3-119-120	S	09/11/18		P	1																	X	
	EWHEQ MW3-09-10	S	09/11/18		P	1																	X	
	EWHEQ MW9-09-10	S	09/11/18		P	1			X															
	EWHEQ MW9-09-10	S	09/11/18		P	1																	X	
	EWHEQ MW9-14-15	S	09/11/18		P	1			X															
	EWHEQ MW9-19-20	S	09/11/18		P	1																	X	

RELINQUISHED BY: Name: Luke Hayes	Date: 13/11/18	RECEIVED BY: Name:	Date	RECEIVED BY: Name: [illegible]	Date: 13/11/18
Of: Aecom Aust Pty Ltd	Time: 14:00	Of	Time	Of	Time: 9:20

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VE = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; Sub Container Codes: Jar = Unpreserved glass jar

Cool* Note No
Transport Co

COC Page _ of _

DAAREV)-007-FM1
FQM - Generic Chain of Custody Form (DAAREV)-007-FM1)
Version 1 June 16, 2014

15/11/18

ANZ

FQM - Generic Chain of Custody Form

CONSULTANT: Arcadis Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke Mayes	Destination Laboratory: Sydney ALS
PROJECT MANAGER (PM): James Peachey	SITE: Pinjarra BAM	MOBILE: 0454376649 PHONE: 0266554753	
PROJECT NUMBER & TASK CO: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@arcadis.com.au	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate): Yes / No / NA
COOLER TEMPERATURE: 19.4 °C
UNBURST: Yes / By:

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples
e.g. High PAHs expected
Extra volumes for QC or trace analysis

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Container Type / Code	Total bottles	EP231X-SF	PFAS	EP231X	HOLD
1	FWHEC MW07_29-30	S	09/11/18		P	1				X
2	FWHEC MW07_59-60	S	09/11/18		P	1				X
3	FWHEC MW09_89-90	S	09/11/18		P	1				X
4	FWHEC MW09_119-120	S	09/11/18		P	1				X
5	RWW MW06_00-01	S	09/11/18		P	1				X
6	RWW MW06_04-05	S	09/11/18		P	1				X
7	RWW MW06_09-10	S	09/11/18		P	1			X	
8	RWW MW06_14-16	S	09/11/18		P	1				X
9	RWW MW06_19-21	S	09/11/18		P	1				X
10	RWW MW06_29-30	S	10/11/18		P	1				X
11	RWW MW06_59-60	S	10/11/18		P	1			X	X
12	RWW MW06_82-83	S	10/11/18		P	1			X	X
13	RWW MW06_89-90	S	10/11/18		P	1				X
14	RWW MW07_00-01	S	09/11/18		P	1				X
15	RWW MW07_04-05	S	09/11/18		P	1			X	
16	RWW MW07_14-15	S	09/11/18		P	1				X
17	RWW MW07_29-30	S	09/11/18		P	1			X	
18	RWW MW07_59-60	S	09/11/18		P	1				X
19	RWW MW07_89-90	S	09/11/18		P	1				X

RWW-MW06-14-15 ←

RELINQUISHED BY	RECEIVED BY	METHOD OF SHIPMENT
Name: Luke Mayes	Name:	Date: 19/11/18
Date: 13/11/18	Date:	Time: 8:12
Time: 07:00	Time:	Courier Note No:
Org: Arcadis Aust Pty Ltd	Org:	Transport Co:

Bottle Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VA = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
B = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; Q = Unpreserved Bag
Sub-Sample Codes: LP = Leachate pour through; LC = Leachate core

13/11/18

ANZ

FQM - Generic Chain of Custody Form

CONSULTANT: Aecom Aust. Pty Ltd	ADDRESS / OFFICE
PROJECT MANAGER (PM): James Peachey	SITE: Project EAM
PROJECT NUMBER & TASK CODE: 60588644	P.O. NO.
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.
SAMPLER: Nick Hitch	
MOBILE: [illegible]	PHONE: [illegible]
EMAIL REPORT TO: James Peachey@aecom.com	
Destination Laboratory: Sydney ALS	

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate): Intact Yes No N/A

SAMPLE TEMPERATURE: 19.4°C

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite price)

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

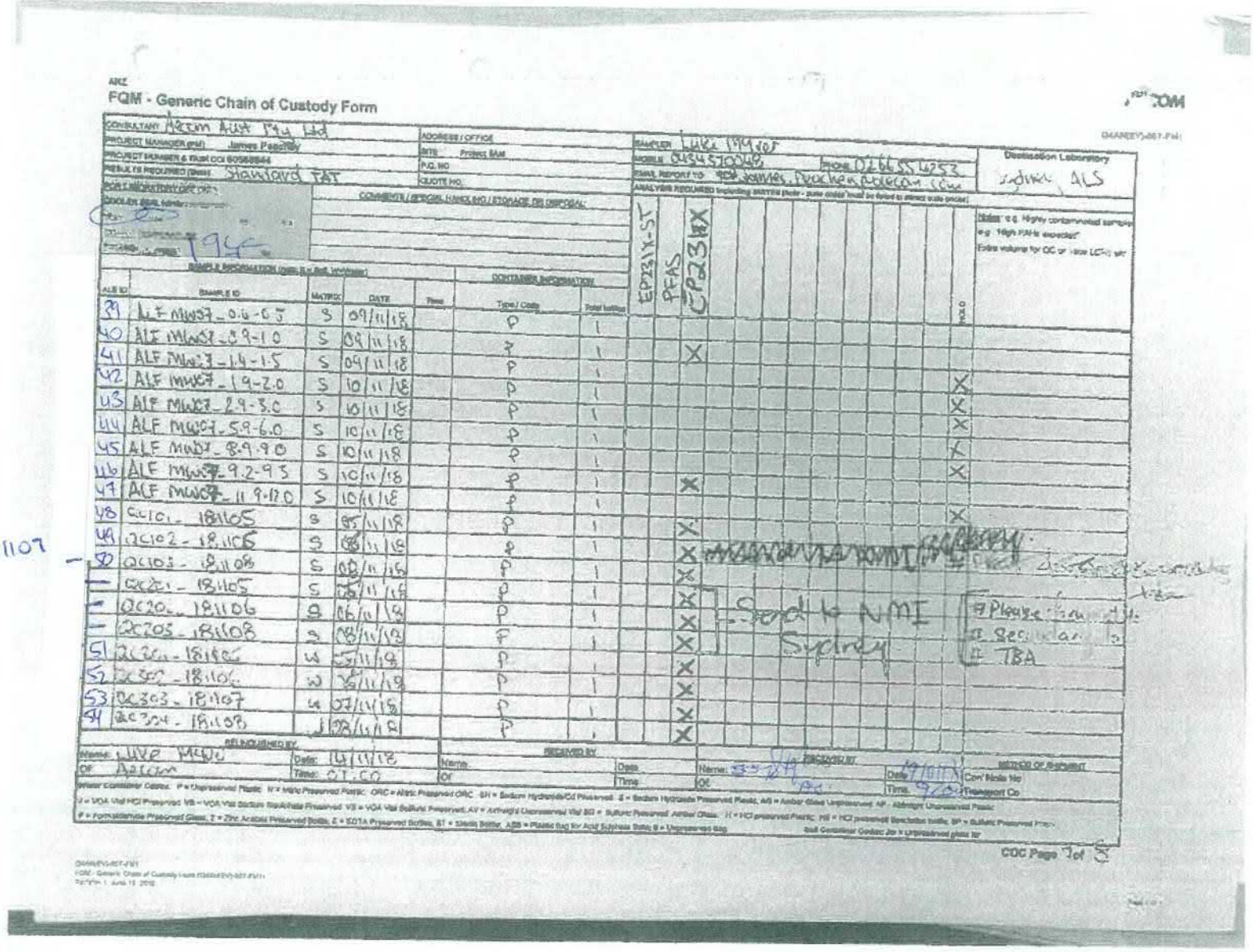
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231X-ST	PFAS	EP231X										HOLD	Notes
20	RWW MW08_0.0-0.1	S	08/11/18		P	1			X											
21	RWW MW08_0.4-0.5	S	08/11/18		P	1													X	
22	RWW MW08_0.9-1.0	S	08/11/18		P	1			[illegible]										X	
23	RWW MW08_1.4-1.5	S	08/11/18		P	1													X	
24	RWW MW08_2.9-3.0	S	08/11/18		P	1													X	
25	RWW MW08_5.9-6.0	S	08/11/18		P	1													X	
26	RWW MW08_8.9-9.0	S	08/11/18		P	1			X										[illegible]	
27	RWW MW08_11.9-12.0	S	08/11/18		P	1													X	
28	ALF MW06_0.0-0.1	S	09/11/18		P	1													X	
29	ALF MW06_0.4-0.5	S	09/11/18		P	1			X											
30	ALF MW06_0.9-1.0	S	09/11/18		P	1													X	
31	ALF MW06_1.4-1.5	S	09/11/18		P	1			X											
32	ALF MW06_1.9-2.0	S	09/11/18		P	1													X	
33	ALF MW06_2.9-3.0	S	10/11/18		P	1													X	
34	ALF MW06_5.9-6.0	S	10/11/18		P	1													X	
35	ALF MW06_6.4-6.5	S	10/11/18		P	1													X	
36	ALF MW06_8.9-9.0	S	10/11/18		P	1													X	
37	ALF MW06_11.9-12.0	S	10/11/18		P	1													X	
38	ALF MW07_0.0-0.1	S	10/11/18		P	1													X	

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Mayer	Date: 10/11/18	Name:	Date:	Name: [illegible]	Date: 12/11/18	Con' Note No:
Of: Aecom Aust Pty Ltd	Time: 17.00	Of:	Time:	Of: ALS	Time: [illegible]	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag
Soil Container Codes: Jar = Unpreserved Glass Jar

COC Page of 4

13/11/18



FQM - Generic Chain of Custody Form

CONSULTANT: Aecom Aust Pty Ltd
PROJECT MANAGER (PM): James Peachey
PROJECT NUMBER & TASK CC: 60568844
RESULTS REQUIRED (Date): Standard TAT
ADDRESS / OFFICE:
ATTN: Project Adm
P.O. NO:
QUOTE NO:
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
SAMPLER: Luke Pengilly
MOBILE: 0454570048
EMAIL REPORT TO: james.peachey@aecom.com
PHONE: 0266554253
ANALYSIS REQUIRED including SUITES (Note - suite codes must be listed to attract suite prices)
Destination Laboratory: Sydney ALS
Notes: e.g. Highly contaminated samples e.g. 10ph PAHs expected. Extra volume for QC or Low LOR's etc

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Container Type / Code	Total bottles	EP231X-ST	PFAS CP23WX	HOLD
39	ALF MW07_0.0-0.5	S	09/11/18		P	1			
40	ALF MW07_0.9-1.0	S	09/11/18		P	1		X	
41	ALF MW07_1.4-1.5	S	09/11/18		P	1			
42	ALF MW07_1.9-2.0	S	10/11/18		P	1			X
43	ALF MW07_2.9-3.0	S	10/11/18		P	1			X
44	ALF MW07_5.9-6.0	S	10/11/18		P	1			X
45	ALF MW07_8.9-9.0	S	10/11/18		P	1			X
46	ALF MW07_9.2-9.5	S	10/11/18		P	1			X
47	ALF MW07_11.9-12.0	S	10/11/18		P	1		X	
48	QC101_181105	S	05/11/18		P	1			X
49	QC102_181106	S	06/11/18		P	1		X	
50	QC103_181108	S	08/11/18		P	1		X	
—	QC201_181105	S	05/11/18		P	1		X	
—	QC202_181106	S	06/11/18		P	1		X	
—	QC203_181108	S	08/11/18		P	1		X	
51	QC204_181106	W	06/11/18		P	1		X	
52	QC205_181105	W	05/11/18		P	1		X	
53	QC303_181107	W	07/11/18		P	1		X	
54	QC304_181108	W	08/11/18		P	1		X	

QC103-181107

Send to NMI Sydney

Please hold
Secondary
TBA

RELINQUISHED BY: Name: Luke Pengilly Of: Aecom Date: 14/11/18 Time: 07:00
RECEIVED BY: Name: Of: Date: Time:
RECEIVED BY: Name: Of: Date: 19/11/18 Time: 9:00
METHOD OF SHIPMENT: Con' Note No: Transport Co:

Sample Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic bag for Acid Sulphate Soils; B = Unpreserved Bag. Sub-Coordinator Codes: Jar = Unpreserved glass Jar

COC Page 1 of 2

QMANEV3-007-FM1
FQM - Generic Chain of Custody Form (QMANEV3-007-FM1)
REVISION: 1 June 15, 2018

ANZ

FQM - Generic Chain of Custody Form

CONSULTANT: Arcadis Aust Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Mike Mclver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434 781 [illegible] PHONE:	
PROJECT NUMBER & TASK CD: 60588844	P.O. NO.:	EMAIL REPORT TO: James.Peachey@	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to ensure suite prices)	

LAB USE ONLY
COOLER SEAL (circle appropriate): Yes / No / N/A
COOLING WATER TEMP: 19.4C
SEAL INTACT: Yes / No / NA

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL

Notes e.g. highly contaminated samples
e.g. "High Flow Analysis"
Extra volume for QC or matrix spike etc

SAMPLE INFORMATION (incl. S = Soil, W=Water)				CONTAINER INFORMATION		PFOS+PFOA-SF	PFAS-231X	HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles			
55	BC305-181109	W	09/11/18		P	1	X		
56	BC301-181110	W	10/11/18		P	1	X		
57	RWWMW08-19-20		8/11/18						
58	RWWMW07-09-10		8/11/18						

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		
Name: Mike Mclver	Date: 14/11/18	Name:	Date:	Name: [illegible]	Date: 14/11/18	Cool Note: ...
Of: Arcadis	Time: 2? ED	Of:	Time:	Of: ALS	Time: 7:20pm	Transport Co:

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cd Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved, VB = VOA Vial Sodium Bisulphate Preserved, VS = VOA Vial Sulfuric Preserved, AV = Airfreight Unpreserved Vial, SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl preserved Speciation bottle, SP = Sulfuric Preserved Plastic
F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottle, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Sun Container Cooler, Jar = Unpreserved glass jar

CCC Page 1 of 1

14/11/18

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1834520**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: james.peachey@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Facsimile	: +61 07 3553 2050	Facsimile	: +61-2-8784 8500
Project	: 60588844	Page	: 1 of 4
Order number	:	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project SAM		
Sampler	: LUKE MCIVER		

Dates

Date Samples Received	: 19-Nov-2018 09:20	Issue Date	: 20-Nov-2018
Client Requested Due Date	: 27-Nov-2018	Scheduled Reporting Date	: **27-Nov-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 19.4 - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 58 / 19

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This workorder has been split from ES1834518 due to large number of samples.**
- **Sample QC103_181108 was received as QC103_181109.**
- **Sample RWW_MW06_1.4-1.6 was received as RWW_MW06_1.4-1.5.**
- **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.

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

ES1834520-050 : [08-Nov-2018] : QC103_181108 - QC103_181109

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	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1834520-001	09-Nov-2018 00:00	EWHEQ_MW09_2.9-3.0	☐		
ES1834520-002	09-Nov-2018 00:00	EWHEQ_MW09_5.9-6.0	☐		
ES1834520-003	09-Nov-2018 00:00	EWHEQ_MW09_8.9-9.0	☐		
ES1834520-004	09-Nov-2018 00:00	EWHEQ_MW09_11.9-12.0	☐		
ES1834520-005	09-Nov-2018 00:00	RWW_MW06_0.0-0.1	☐		
ES1834520-006	09-Nov-2018 00:00	RWW_MW06_0.4-0.5	☐		
ES1834520-007	09-Nov-2018 00:00	RWW_MW06_0.9-1.0		☐	☐
ES1834520-008	09-Nov-2018 00:00	RWW_MW06_1.4-1.6 RW..	☐		
ES1834520-009	09-Nov-2018 00:00	RWW_MW06_1.9-2.0	☐		
ES1834520-010	10-Nov-2018 00:00	RWW_MW06_2.9-3.0	☐		
ES1834520-011	10-Nov-2018 00:00	RWW_MW06_5.9-6.0	☐		
ES1834520-012	10-Nov-2018 00:00	RWW_MW06_8.2-8.3		☐	☐
ES1834520-013	10-Nov-2018 00:00	RWW_MW06_8.9-9.0	☐		
ES1834520-014	08-Nov-2018 00:00	RWW_MW07_0.0-0.1	☐		
ES1834520-015	08-Nov-2018 00:00	RWW_MW07_0.4-0.5		☐	☐
ES1834520-016	08-Nov-2018 00:00	RWW_MW07_1.4-1.5	☐		
ES1834520-017	08-Nov-2018 00:00	RWW_MW07_2.9-3.0		☐	☐
ES1834520-018	08-Nov-2018 00:00	RWW_MW07_5.9-6.0	☐		
ES1834520-019	08-Nov-2018 00:00	RWW_MW07_8.9-9.0	☐		
ES1834520-020	08-Nov-2018 00:00	RWW_MW08_0.0-0.1		☐	☐
ES1834520-021	08-Nov-2018 00:00	RWW_MW08_0.4-0.5	☐		
ES1834520-022	08-Nov-2018 00:00	RWW_MW08_0.9-1.0	☐		
ES1834520-023	08-Nov-2018 00:00	RWW_MW08_1.4-1.5	☐		
ES1834520-024	08-Nov-2018 00:00	RWW_MW08_2.9-3.0	☐		
ES1834520-025	08-Nov-2018 00:00	RWW_MW08_5.9-6.0	☐		
ES1834520-026	08-Nov-2018 00:00	RWW_MW08_8.9-9.0		☐	☐
ES1834520-027	08-Nov-2018 00:00	RWW_MW08_11.9-12.0	☐		
ES1834520-028	09-Nov-2018 00:00	ALF_MW06_0.0-0.1	☐		
ES1834520-029	09-Nov-2018 00:00	ALF_MW06_0.4-0.5		☐	☐
ES1834520-030	09-Nov-2018 00:00	ALF_MW06_0.9-1.0	☐		
ES1834520-031	09-Nov-2018 00:00	ALF_MW06_1.4-1.5		☐	☐
ES1834520-032	10-Nov-2018 00:00	ALF_MW06_1.9-2.0	☐		
ES1834520-033	10-Nov-2018 00:00	ALF_MW06_2.9-3.0	☐		

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1834520-034	10-Nov-2018 00:00	ALF_MW06_5.9-6.0	☐		
ES1834520-035	10-Nov-2018 00:00	ALF_MW06_6.4-6.5	☐		
ES1834520-036	10-Nov-2018 00:00	ALF_MW06_8.9-9.0	☐		
ES1834520-037	10-Nov-2018 00:00	ALF_MW06_11.9-12.0	☐		
ES1834520-038	10-Nov-2018 00:00	ALF_MW07_0.0-0.1	☐		
ES1834520-039	09-Nov-2018 00:00	ALF_MW07_0.4-0.5	☐		
ES1834520-040	09-Nov-2018 00:00	ALF_MW07_0.9-1.0		☐	☐
ES1834520-041	09-Nov-2018 00:00	ALF_MW07_1.4-1.5	☐		
ES1834520-042	10-Nov-2018 00:00	ALF_MW07_1.9-2.0	☐		
ES1834520-043	10-Nov-2018 00:00	ALF_MW07_2.9-3.0	☐		
ES1834520-044	10-Nov-2018 00:00	ALF_MW07_5.9-6.0	☐		
ES1834520-045	10-Nov-2018 00:00	ALF_MW07_8.9-9.0	☐		
ES1834520-046	10-Nov-2018 00:00	ALF_MW07_9.2-9.3		☐	☐
ES1834520-047	10-Nov-2018 00:00	ALF_MW09_11.9-120	☐		
ES1834520-048	05-Nov-2018 00:00	QC101_181105		☐	☐
ES1834520-049	08-Nov-2018 00:00	QC102_181106		☐	☐
ES1834520-050	08-Nov-2018 00:00	QC103_181108 QC103_...		☐	☐

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (28 analytes)
ES1834520-051	05-Nov-2018 00:00	QC301_181105		☐
ES1834520-052	05-Nov-2018 00:00	QC302_181106		☐
ES1834520-053	07-Nov-2018 00:00	QC303_181107		☐
ES1834520-054	08-Nov-2018 00:00	QC304_181108		☐
ES1834520-055	09-Nov-2018 00:00	QC305_181109		☐
ES1834520-056	10-Nov-2018 00:00	QC306_181110		☐
ES1834520-057	08-Nov-2018 00:00	RWWMW08_1.9-2.0	☐	
ES1834520-058	08-Nov-2018 00:00	RWWMW07_0.9-1.0	☐	

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1834520**	Page	: 1 of 13
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 19-Nov-2018 09:20
Order number	: 60588844	Date Analysis Commenced	: 21-Nov-2018
C-O-C number	: ----	Issue Date	: 26-Nov-2018 16:26
Sampler	: LUKE MCIVER		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 58		
No. of samples analysed	: 19		

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.

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				RWW_MW06_0.9-1.0	RWW_MW06_8.2-8.3	RWW_MW07_0.4-0.5	RWW_MW07_2.9-3.0	RWW_MW08_0.0-0.1
				09-Nov-2018 00:00	10-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00
				ES1834520-007	ES1834520-012	ES1834520-015	ES1834520-017	ES1834520-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**17.5**	**55.1**	**11.7**	**10.0**	**1.4**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0005**	<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)				RWW_MW06_0.9-1.0	RWW_MW06_8.2-8.3	RWW_MW07_0.4-0.5	RWW_MW07_2.9-3.0	RWW_MW08_0.0-0.1
				09-Nov-2018 00:00	10-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00
				ES1834520-007	ES1834520-012	ES1834520-015	ES1834520-017	ES1834520-020
				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	**0.0005**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0005**	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0005**	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**68.0**	**79.0**	**70.5**	**69.5**	**73.0**
13C8-PFOA	----	0.0002	%	**87.5**	**97.0**	**75.0**	**79.0**	**86.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				RWW_MW08_8.9-9.0	ALF_MW06_0.4-0.5	ALF_MW06_1.4-1.5	ALF_MW07_0.9-1.0	ALF_MW07_9.2-9.3
				08-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	10-Nov-2018 00:00
				ES1834520-026	ES1834520-029	ES1834520-031	ES1834520-040	ES1834520-046
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**32.9**	**11.3**	**13.0**	**16.7**	**17.8**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
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)				RWW_MW08_8.9-9.0	ALF_MW06_0.4-0.5	ALF_MW06_1.4-1.5	ALF_MW07_0.9-1.0	ALF_MW07_9.2-9.3
				08-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	09-Nov-2018 00:00	10-Nov-2018 00:00
				ES1834520-026	ES1834520-029	ES1834520-031	ES1834520-040	ES1834520-046
				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	<0.0005	<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	%	**69.0**	**71.5**	**73.5**	**70.5**	**73.5**
13C8-PFOA	----	0.0002	%	**81.0**	**81.0**	**82.5**	**77.0**	**87.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				QC101_181105	QC102_181106	QC103_181108 QC103_181109	----	----
				05-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00	----	----
				ES1834520-048	ES1834520-049	ES1834520-050	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**2.1**	**1.0**	**2.3**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0012**	<0.0002	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0281**	<0.0002	<0.0002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	**0.0010**	<0.0002	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0003**	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				QC101_181105	QC102_181106	QC103_181108 QC103_181109	----	----
				05-Nov-2018 00:00	08-Nov-2018 00:00	08-Nov-2018 00:00	----	----
				ES1834520-048	ES1834520-049	ES1834520-050	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0308**	<0.0002	<0.0002	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0293**	<0.0002	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0296**	<0.0002	<0.0002	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**62.0**	**71.0**	**64.5**	----	----
13C8-PFOA	----	0.0002	%	**85.5**	**91.0**	**86.0**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC301_181105	QC302_181106	QC303_181107	QC304_181108	QC305_181109
				05-Nov-2018 00:00	05-Nov-2018 00:00	07-Nov-2018 00:00	08-Nov-2018 00:00	09-Nov-2018 00:00
				ES1834520-051	ES1834520-052	ES1834520-053	ES1834520-054	ES1834520-055
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC301_181105	QC302_181106	QC303_181107	QC304_181108	QC305_181109
				05-Nov-2018 00:00	05-Nov-2018 00:00	07-Nov-2018 00:00	08-Nov-2018 00:00	09-Nov-2018 00:00
				ES1834520-051	ES1834520-052	ES1834520-053	ES1834520-054	ES1834520-055
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**103**	**97.1**	**97.5**	**98.1**	**92.7**
13C8-PFOA	----	0.02	%	**102**	**100**	**104**	**100**	**95.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC306_181110	----	----	----	----
				10-Nov-2018 00:00	----	----	----	----
				ES1834520-056	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC306_181110	----	----	----	----
				10-Nov-2018 00:00	----	----	----	----
				ES1834520-056	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**108**	----	----	----	----
13C8-PFOA	----	0.02	%	**109**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
□□ □□□□□	□□ □□ □□	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
□□ □□□□□	□□ □□ □□	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1834520**	Page	: 1 of 15
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 19-Nov-2018
Order number	: 60588844	Date Analysis Commenced	: 21-Nov-2018
C-O-C number	: ----	Issue Date	: 26-Nov-2018
Sampler	: LUKE MCIVER		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 58		
No. of samples analysed	: 19		

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

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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: **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: 2049571)									
ES1834518-039	Anonymous	EA055: Moisture Content	----	0.1	%	30.3	31.6	4.20	0% - 20%
ES1834520-017	RWW_MW07_2.9-3.0	EA055: Moisture Content	----	0.1	%	10.0	10.1	1.06	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2049572)									
ES1834520-049	QC102_181106	EA055: Moisture Content	----	0.1	%	1.0	1.0	0.00	0% - 50%
ES1834532-003	Anonymous	EA055: Moisture Content	----	0.1	%	17.5	16.8	3.78	0% - 50%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2048545)									
ES1834518-004	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	0.0002	0.0003	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
ES1834518-046	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	0.0004	0.0006	46.0	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: 2048552)									
EM1818519-006	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	0.0004	0.0004	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0065	0.0059	9.57	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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2048552) - continued									
EM1818519-006	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
ES1834520-048	QC101_181105	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	0.0012	0.0009	29.3	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	0.0281	0.0270	3.87	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0010	0.0013	20.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2048545)									
ES1834518-004	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
ES1834518-046	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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2048552)									
EM1818519-006	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

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: 2048552) - continued									
EM1818519-006	Anonymous	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
ES1834520-048	QC101_181105	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	0.0003	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: 2048545)									
ES1834518-004	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
ES1834518-046	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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2048552)									

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: 2048552) - continued									
EM1818519-006	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
ES1834520-048	QC101_181105	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2048545)									
ES1834518-004	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
ES1834518-046	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

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: 2048545) - continued									
ES1834518-046	Anonymous	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: 2048552)									
EM1818519-006	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
ES1834520-048	QC101_181105	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	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: 2050758)									
EM1818554-002	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	49.9	44.0	12.4	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	1.97	2.13	7.96	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.58	1.64	4.09	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	17.8	15.6	12.9	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	1.30	1.48	13.0	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.03	0.03	0.00	No Limit
ES1834520-056	QC306_181110	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2050758)									
EM1818554-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	1.14	1.27	10.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	3.64	3.71	1.98	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	3.04	3.22	5.69	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	1.50	1.50	0.00	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.12	0.13	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: 2050758) - continued									
EM1818554-002	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.5	0.4	28.6	No Limit
ES1834520-056	QC306_181110	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2050758)									
EM1818554-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1834520-056	QC306_181110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2050758) - continued									
ES1834520-056	QC306_181110	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2050758)									
EM1818554-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	3.26	3.66	11.6	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	0.67	0.69	2.65	0% - 50%
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1834520-056	QC306_181110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2050758)									
EM1818554-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	86.4	79.5	8.40	0% - 20%
ES1834520-056	QC306_181110	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	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: 2048545)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.0	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.4	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.8	54	125
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2048552)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	63.2	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.2	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.8	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.2	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2048545)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	55.3	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	68.0	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.6	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.4	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.3	59	129
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2048552)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	52.0	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.2	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	62	130

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: 2048552) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	61.6	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	70.2	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2048545)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	72.3	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.8	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	66.0	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	67.2	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	55	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2048552)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	66.7	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	71.3	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.8	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.8	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.0	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2048545)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.8	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.0	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.8	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2048552)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.4	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	73.2	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.4	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.0	60	130

Sub-Matrix: **WATER**

	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
		Spike	Spike Recovery (%)	Recovery Limits (%)

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2050758)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	90.2	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	97.8	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	108	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	95.6	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	100	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2050758)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	107	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	96.4	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	101	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	100	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	105	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	106	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	105	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	99.0	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	97.2	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	102	70	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2050758)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	80.8	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	108	70	150
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	98.2	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	108	70	150
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	105	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	95.8	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	114	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2050758)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	115	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	110	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	116	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	113	70	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: 2048545)							
ES1834518-004	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	55.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	64.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	65.6	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	58.8	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	71.6	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2048552)							
EM1818519-006	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	58.4	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	66.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	65.2	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	64.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	62.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2048545)							
ES1834518-004	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	50.6	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	65.6	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	67.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	71.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	67.2	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	72.4	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	66.4	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	74.8	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	68.4	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	58.4	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	79.0	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2048552)							
EM1818519-006	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	50.3	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	74.0	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	65.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	78.8	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	74.8	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	68.4	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	72.8	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: 2048552) - continued							
EM1818519-006	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	54.8	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	74.4	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2048545)							
ES1834518-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	62.0	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	65.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	68.9	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	72.4	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	66.5	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	66.8	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	89.2	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2048552)							
EM1818519-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	63.6	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	64.9	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	65.2	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	70.4	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	64.4	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	70.0	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	89.2	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2048545)							
ES1834518-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	80.0	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	70.4	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	67.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	68.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2048552)							
EM1818519-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	79.2	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	70.8	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	73.2	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	70.0	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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2050758)							
EM1818554-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	89.8	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	74.6	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	# Not Determined	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	92.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	# Not Determined	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	65.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2050758)							
EM1818554-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	66.8	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	# Not Determined	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	# Not Determined	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	82.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	88.2	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	81.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	87.0	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	85.4	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	80.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	65.0	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	90.3	50	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2050758)							
EM1818554-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	79.0	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	77.8	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	80.6	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	79.9	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	72.6	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	88.2	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	81.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2050758)							
EM1818554-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	112	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	# Not Determined	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*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2050758) - continued							
EM1818554-002	Anonymous	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	71.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	78.2	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1834520**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 19-Nov-2018
Site	: Project SAM	Issue Date	: 26-Nov-2018
Sampler	: LUKE MCIVER	No. of samples received	: 58
Order number	: 60588844	No. of samples analysed	: 19

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM1818519--006	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EM1818554--002	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EM1818554--002	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM1818554--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EM1818554--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EM1818554--002	Anonymous	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
HDPE Soil Jar						
QC101_181105	----	----	----	21-Nov-2018	19-Nov-2018	**2**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
QC101_181105		**05-Nov-2018**	**----**	----	----	**21-Nov-2018**	19-Nov-2018	×
HDPE Soil Jar (EA055)								
RWW_MW07_0.4-0.5,	RWW_MW07_2.9-3.0,	**08-Nov-2018**	**----**	----	----	**21-Nov-2018**	22-Nov-2018	✓
RWW_MW08_0.0-0.1,	RWW_MW08_8.9-9.0,							
QC102_181106,	QC103_181108 - QC103_181109							
HDPE Soil Jar (EA055)								
RWW_MW06_0.9-1.0,	ALF_MW06_0.4-0.5,	**09-Nov-2018**	**----**	----	----	**21-Nov-2018**	23-Nov-2018	✓
ALF_MW06_1.4-1.5,	ALF_MW07_0.9-1.0							
HDPE Soil Jar (EA055)								
RWW_MW06_8.2-8.3,	ALF_MW07_9.2-9.3	**10-Nov-2018**	**----**	----	----	**21-Nov-2018**	24-Nov-2018	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
QC101_181105		**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
RWW_MW07_0.4-0.5,	RWW_MW07_2.9-3.0,	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
RWW_MW08_0.0-0.1,	RWW_MW08_8.9-9.0,							
QC102_181106,	QC103_181108 - QC103_181109							
HDPE Soil Jar (EP231X)								
RWW_MW06_0.9-1.0,	ALF_MW06_0.4-0.5,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
ALF_MW06_1.4-1.5,	ALF_MW07_0.9-1.0							
HDPE Soil Jar (EP231X)								
RWW_MW06_8.2-8.3,	ALF_MW07_9.2-9.3	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
QC101_181105		**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
RWW_MW07_0.4-0.5,	RWW_MW07_2.9-3.0,	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
RWW_MW08_0.0-0.1,	RWW_MW08_8.9-9.0,							
QC102_181106,	QC103_181108 - QC103_181109							
HDPE Soil Jar (EP231X)								
RWW_MW06_0.9-1.0,	ALF_MW06_0.4-0.5,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
ALF_MW06_1.4-1.5,	ALF_MW07_0.9-1.0							
HDPE Soil Jar (EP231X)								
RWW_MW06_8.2-8.3,	ALF_MW07_9.2-9.3	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓

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)								
QC101_181105		**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
RWW_MW07_0.4-0.5,	RWW_MW07_2.9-3.0,	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
RWW_MW08_0.0-0.1,	RWW_MW08_8.9-9.0,							
QC102_181106,	QC103_181108 - QC103_181109							
HDPE Soil Jar (EP231X)								
RWW_MW06_0.9-1.0,	ALF_MW06_0.4-0.5,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
ALF_MW06_1.4-1.5,	ALF_MW07_0.9-1.0							
HDPE Soil Jar (EP231X)								
RWW_MW06_8.2-8.3,	ALF_MW07_9.2-9.3	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
QC101_181105		**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
RWW_MW07_0.4-0.5,	RWW_MW07_2.9-3.0,	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
RWW_MW08_0.0-0.1,	RWW_MW08_8.9-9.0,							
QC102_181106,	QC103_181108 - QC103_181109							
HDPE Soil Jar (EP231X)								
RWW_MW06_0.9-1.0,	ALF_MW06_0.4-0.5,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
ALF_MW06_1.4-1.5,	ALF_MW07_0.9-1.0							
HDPE Soil Jar (EP231X)								
RWW_MW06_8.2-8.3,	ALF_MW07_9.2-9.3	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
QC101_181105		**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
HDPE Soil Jar (EP231X)								
RWW_MW07_0.4-0.5,	RWW_MW07_2.9-3.0,	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
RWW_MW08_0.0-0.1,	RWW_MW08_8.9-9.0,							
QC102_181106,	QC103_181108 - QC103_181109							
HDPE Soil Jar (EP231X)								
RWW_MW06_0.9-1.0,	ALF_MW06_0.4-0.5,	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	01-Jan-2019	✓
ALF_MW06_1.4-1.5,	ALF_MW07_0.9-1.0							
HDPE Soil Jar (EP231X)								
RWW_MW06_8.2-8.3,	ALF_MW07_9.2-9.3	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-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

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) QC301_181105, QC302_181106	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	04-May-2019	✓
HDPE (no PTFE) (EP231X) QC303_181107	**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	06-May-2019	✓
HDPE (no PTFE) (EP231X) QC304_181108	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	07-May-2019	✓
HDPE (no PTFE) (EP231X) QC305_181109	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	08-May-2019	✓
HDPE (no PTFE) (EP231X) QC306_181110	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	09-May-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) QC301_181105, QC302_181106	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	04-May-2019	✓
HDPE (no PTFE) (EP231X) QC303_181107	**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	06-May-2019	✓
HDPE (no PTFE) (EP231X) QC304_181108	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	07-May-2019	✓
HDPE (no PTFE) (EP231X) QC305_181109	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	08-May-2019	✓
HDPE (no PTFE) (EP231X) QC306_181110	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	09-May-2019	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) QC301_181105, QC302_181106	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	04-May-2019	✓
HDPE (no PTFE) (EP231X) QC303_181107	**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	06-May-2019	✓
HDPE (no PTFE) (EP231X) QC304_181108	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	07-May-2019	✓
HDPE (no PTFE) (EP231X) QC305_181109	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	08-May-2019	✓
HDPE (no PTFE) (EP231X) QC306_181110	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	09-May-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) QC301_181105, QC302_181106	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	04-May-2019	✓
HDPE (no PTFE) (EP231X) QC303_181107	**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	06-May-2019	✓
HDPE (no PTFE) (EP231X) QC304_181108	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	07-May-2019	✓
HDPE (no PTFE) (EP231X) QC305_181109	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	08-May-2019	✓
HDPE (no PTFE) (EP231X) QC306_181110	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	09-May-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
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) QC301_181105, QC302_181106	**05-Nov-2018**	**22-Nov-2018**	04-May-2019	✓	**23-Nov-2018**	04-May-2019	✓
HDPE (no PTFE) (EP231X) QC303_181107	**07-Nov-2018**	**22-Nov-2018**	06-May-2019	✓	**23-Nov-2018**	06-May-2019	✓
HDPE (no PTFE) (EP231X) QC304_181108	**08-Nov-2018**	**22-Nov-2018**	07-May-2019	✓	**23-Nov-2018**	07-May-2019	✓
HDPE (no PTFE) (EP231X) QC305_181109	**09-Nov-2018**	**22-Nov-2018**	08-May-2019	✓	**23-Nov-2018**	08-May-2019	✓
HDPE (no PTFE) (EP231X) QC306_181110	**10-Nov-2018**	**22-Nov-2018**	09-May-2019	✓	**23-Nov-2018**	09-May-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: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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. 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
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. 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
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.

Updated COC received 23/11/18 5.30pm

AECOM

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE: Fortitude Valley	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: (04)34370048	PHONE (02)66554253 ALS BRISBANE
PROJECT NUMBER & TASK CODE: 60588844	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com; sarina.jakobi@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

[redacted]

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP231X	HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
1	EWHEQ MW06_0.4-0.5	Soil	14/11/18		Plastic Jar	1	X	
2	EWHEQ MW06_0.9-1.0	Soil	14/11/18		Plastic Jar	1		
3	EWHEQ MW06_1.4-1.5	Soil	14/11/18		Plastic Jar	1	X	
4	EWHEQ MW06_1.9-2.0	Soil	14/11/18		Plastic Jar	1		
5	EWHEQ MW06_2.9-3.0	Soil	14/11/18		Plastic Jar	1		
6	EWHEQ MW06_5.9-6.0	Soil	14/11/18		Plastic Jar	1		
7	EWHEQ MW06_10.4-10.5	Soil	14/11/18		Plastic Jar	1		
8	EWHEQ MW07_0.4-0.5	Soil	14/11/18		Plastic Jar	1		
9	EWHEQ MW07_0.9-1.0	Soil	14/11/18		Plastic Jar	1		
10	EWHEQ MW07_1.4-1.5	Soil	14/11/18		Plastic Jar	1		
11	EWHEQ MW07_1.9-2.0	Soil	14/11/18		Plastic Jar	1		
12	EWHEQ MW07_2.9-3.0	Soil	14/11/18		Plastic Jar	1		
13	EWHEQ MW07_5.9-6.0	Soil	14/11/18		Plastic Jar	1		
14	EWHEQ MW07_8.9-9.0	Soil	14/11/18		Plastic Jar	1		
15	EWHEQ MW07_11.9-12.0	Soil	14/11/18		Plastic Jar	1		
16	ELS MW29_0.4-0.5	Soil	15/11/18		Plastic Jar	1	X	
17	ELS MW29_0.9-1.0	Soil	15/11/18		Plastic Jar	1		
18	ELS MW29_1.4-1.5	Soil	15/11/18		Plastic Jar	1	X	
19	ELS MW29_1.9-2.0		16/11/18		Plastic Jar	1		

Subcon / Forward Lab / Split WO

Lab / Analysis:

Organised By / Date:

Relinquished By / Date:

Connote / Courier:

WO No: ES1835146

Attached By PO / Internal Sheet:

ES1835147

Environmental Division Sydney
Work Order Reference
ES1835146

Telephone : +61-2-8784 8555

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 1 of 16

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project Sam	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK CO: 60588844	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION | EP231X | HOLD

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231X	HOLD
20	ELS MW20_2.9-3.0	Soil	16/11/18		Plastic Jar	1		x
21	ELS MW28_5.9-6.0	Soil	15/11/18		Plastic Jar	1		x
22	ELS MW29_8.9-9.0	Soil	16/11/18		Plastic Jar	1		x
23	ELN MW10_0.4-0.5	Soil	15/11/18		Plastic Jar	1	X	
24	ELN MW10_0.9-1.0	Soil	15/11/18		Plastic Jar	1	X	
25	ELN MW10_1.4-1.5	Soil	15/11/18		Plastic Jar	1		x
26	ELN MW10_1.9-2.0	Soil	16/11/18		Plastic Jar	1	X	
27	ELN MW10_2.9-3.0	Soil	16/11/18		Plastic Jar	1	X	
28	ELN MW10_5.9-6.0	Soil	16/11/18		Plastic Jar	1		x
29	ELN MW10_8.9-9.0	Soil	16/11/18		Plastic Jar	1		x
	ELN MW10_8.9-9.0	Soil	16/11/18		Plastic Jar	1		x
30	ELN MW10_10.9-11.0	Soil	16/11/18		Plastic Jar	1		x
31	ELN MW09_0.4-0.5	Soil	15/11/18		Plastic Jar	1	X	
32	ELN MW09_0.9-1.0	Soil	15/11/18		Plastic Jar	1		x
33	ELN MW09_1.4-1.5	Soil	15/11/18		Plastic Jar	1	X	
34	ELN MW09_1.9-2.0	Soil	17/11/18		Plastic Jar	1		x
35	ELN MW08_2.9-3.0	Soil	17/11/18		Plastic Jar	1		x
36	ELN MW09_5.9-6.0	Soil	17/11/18		Plastic Jar	1		x
37	ELN MW09_7.0-7.1	Soil	17/11/18		Plastic Jar	1		x

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

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 2 of 16

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE:	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK CO: 60588844	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED Including SUITES (note - suite codes must be listed to extract suite prices)	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note, S = Soil, Ww/Water)					CONTAINER INFORMATION		6P231K													HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles														
38	ELN MW09_8.9-9.0	Soil	17/11/18		Plastic Jar	1														X
39	ELN MW09_10.9-11.0	Soil	17/11/18		Plastic Jar	1														X
40	ELS MW28_0.4-0.5	Soil	15/11/18		Plastic Jar	1	X													X
41	ELS MW28_0.9-1.0	Soil	15/11/18		Plastic Jar	1														X
42	ELS MW28_1.4-1.5	Soil	15/11/18		Plastic Jar	1														X
43	ELS MW28_2.9-3.0	Soil	17/11/18		Plastic Jar	1														X
44	ELS MW28_5.9-6.0	Soil	17/11/18		Plastic Jar	1														X
45	ELS MW28_7.0-7.1	Soil	17/11/18		Plastic Jar	1														X
46	ELS MW28_8.9-9.0	Soil	17/11/18		Plastic Jar	1														X
47	ELS MW28_10.4-10.5	Soil	17/11/18		Plastic Jar	1	X													X
48	AHEQ MW08_0.0-0.1	Soil	12/11/18		Plastic Jar	1														X
49	AHEQ MW08_0.4-0.5	Soil	12/11/18		Plastic Jar	1	X													X
50	AHEQ MW08_0.9-1.0	Soil	12/11/18		Plastic Jar	1														X
51	AHEQ MW08_1.4-1.5	Soil	12/11/18		Plastic Jar	1	X													X
52	AHEQ MW08_1.9-2.0	Soil	12/11/18		Plastic Jar	1														X
53	AHEQ MW08_2.9-3.0	Soil	12/11/18		Plastic Jar	1														X
54	AHEQ MW08_5.9-6.0	Soil	12/11/18		Plastic Jar	1														X
55	AHEQ MW08_6.8-6.9	Soil	12/11/18		Plastic Jar	1														X
56	AHEQ MW08_8.9-9.0	Soil	12/11/18		Plastic Jar	1														X

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cd Preserved, S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic, HS = HCl preserved Speciation bottle, SP = Sulfuric Preserved Plastic.
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar

ANZ

AECOM

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE:	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK COI 60588644	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date)	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Container Type / Code	Total bottles	6P231X	HOLD
57	AHEQ MW08_8.9-9.0	Soil	12/11/18		Plastic Jar	1		x
58	AHEQ MW08_11.9-12.0	Soil	12/11/18		Plastic Jar	1		x
59	AHEQ MW07_0.0-0.1	Soil	12/11/18		Plastic Jar	1		x
60	AHEQ MW07_0.4-0.5	Soil	12/11/18		Plastic Jar	1	X	
61	AHEQ MW07_0.9-1.0	Soil	12/11/18		Plastic Jar	1		x
62	AHEQ MW07_1.4-1.5	Soil	12/11/18		Plastic Jar	1		x
63	AHEQ MW07_1.9-2.0	Soil	12/11/18		Plastic Jar	1		x
64	AHEQ MW07_2.9-3.0	Soil	12/11/18		Plastic Jar	1		x
65	AHEQ MW07_5.9-6.0	Soil	12/11/18		Plastic Jar	1		x
66	AHEQ MW07_7.2-7.3	Soil	14/11/18 12/11/18		Plastic Jar	1	X	
67	AHEQ MW07_8.9-9.0	Soil	12/11/18		Plastic Jar	1		x
68	AHEQ MW07_11.9-12.0	Soil	12/11/18		Plastic Jar	1		x
69	AHEQ MW10_0.0-0.1	Soil	12/11/18		Plastic Jar	1		x
70	AHEQ MW10_0.4-0.5	Soil	12/11/18		Plastic Jar	1		x
71	AHEQ MW10_0.9-1.0	Soil	12/11/18		Plastic Jar	1	X	
72	AHEQ MW10_1.4-1.5	Soil	12/11/18		Plastic Jar	1		x
73	AHEQ MW10_1.9-2.0	Soil	12/11/18		Plastic Jar	1		x
74	AHEQ MW10_2.9-3.0	Soil	12/11/18		Plastic Jar	1	X	
75	AHEQ MW10_5.9-6.0	Soil	12/11/18		Plastic Jar	1		x

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar

COC Page 1 of 4 16

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE:	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

[redacted]

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP231x	HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		
76	AHEQ MW10_8.9-9.0	Soil	12/11/18		Plastic Jar	1		x
77	AHEQ MW10_11.9-12.0	Soil	12/11/18		Plastic Jar	1		x
78	AHEQ MW11_0.4-0.5	Soil	12/11/18		Plastic Jar	1		x
79	AHEQ MW11_0.9-1.0	Soil	12/11/18		Plastic Jar	1	X	x
80	AHEQ MW11_1.4-1.5	Soil	12/11/18		Plastic Jar	1		x
81	AHEQ MW11_1.9-2.0	Soil	13/11/18		Plastic Jar	1		x
82	AHEQ MW11_2.9-3.0	Soil	13/11/18		Plastic Jar	1	X	x
83	AHEQ MW11_5.9-6.0	Soil	13/11/18		Plastic Jar	1		x
84	AHEQ MW11_9.9-10.0	Soil	13/11/18		Plastic Jar	1		x
85	AHEQ MW11_14.9-15.0	Soil	13/11/18		Plastic Jar	1		x
86	AHEQ MW09_0.4-0.5	Soil	15/11/18		Plastic Jar	1	X	x
87	AHEQ MW09_0.9-1.0	Soil	15/11/18		Plastic Jar	1		x
88	AHEQ MW09_1.4-1.5	Soil	15/11/18		Plastic Jar	1		x
89	AWHEQ MW09 1.9-2.0	Soil	18/11/18		Plastic Jar	1		x
90	AWHEQ MW09 2.9-3.0	Soil	18/11/18		Plastic Jar	1		x
91	AWHEQ MW09 5.9-6.0	Soil	18/11/18		Plastic Jar	1		x
92	AWHEQ MW09 8.9-9.0	Soil	18/11/18		Plastic Jar	1		x
93	AWHEQ MW09 11.9-12.0	Soil	18/11/18		Plastic Jar	1		x
94	AWHEQ MW09 12.1-12.2	Soil	18/11/18		Plastic Jar	1	X	x

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE:	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Container Type / Code	Total bottles	6°231Y	HOLD	Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
95	AWHEO MW09 14.9-15.0	Soil	16/11/18		Plastic Jar	1		x	
96	AP MW02_0.4-0.5	Soil	16/11/18		Plastic Jar	1	X		
97	AP MW02_0.9-1.0	Soil	16/11/18		Plastic Jar	1		x	
98	AP MW02_1.4-1.5	Soil	16/11/18		Plastic Jar	1	X		
99	AP MW02_1.9-2.0	Soil	17/11/18		Plastic Jar	1		x	
100	AP MW02_2.9-3.0	Soil	17/11/18		Plastic Jar	1		x	
101	AP MW02_5.9-6.0	Soil	17/11/18		Plastic Jar	1		x	
102	AP MW02_7.0-7.1	Soil	17/11/18		Plastic Jar	1		x	
103	AP MW02_11.9-12.0	Soil	17/11/18		Plastic Jar	1		x	
104	AP MW01_0.4-0.5	Soil	16/11/18		Plastic Jar	1		x	
105	AP MW01_0.9-1.0	Soil	16/11/18		Plastic Jar	1	X		
106	AP MW01_1.4-1.5	Soil	16/11/18		Plastic Jar	1		x	
107	AP MW01_1.9-2.0	Soil	17/11/18		Plastic Jar	1		x	
108	AP MW01_2.9-3.0	Soil	17/11/18		Plastic Jar	1		x	
109	AP MW01_5.9-6.0	Soil	17/11/18		Plastic Jar	1		x	
110	AP MW01_8.9-9.0	Soil	17/11/18		Plastic Jar	1		x	
111	AP MW01_9.1-9.2	Soil	17/11/18		Plastic Jar	1	X		
112	AP MW01_11.9-12.0	Soil	17/11/18		Plastic Jar	1		x	
113	~~AP MW37_0.9-1.0~~ AFD MW37_0.4-0.5	Soil	13/11/18 16/11/18		Plastic Jar	1		x	

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. *Soil Container Codes:* Jar = Unpreserved glass jar.

114 → Received from Sample AFD MW37-0.0-1 13/11/18

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE:	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Container Type / Code	Total bottles	EP231X											HOLD	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
	AFD MW37_0.9-1.0	Soil	16/11/18		Plastic Jar	1	X												
	AFD MW37_1.4-1.5	Soil	16/11/18		Plastic Jar	1												X	
	AFD MW37_1.9-2.0	Soil	17/11/18		Plastic Jar	1												X	
	AFD MW37_2.9-3.0	Soil	17/11/18		Plastic Jar	1	X												
	AFD MW37_5.9-6.0	Soil	17/11/18		Plastic Jar	1												X	
	AFD MW37_8.9-9.0	Soil	17/11/18		Plastic Jar	1												X	
	AFD MW37 11.5-11.7	Soil	17/11/18		Plastic Jar	1												X	
	LPI MW31_0.4-0.6	Soil	16/11/18		Plastic Jar	1	X												
	LPI MW31_0.9-1.0	Soil	16/11/18		Plastic Jar	1												X	
	LPI MW31_1.4-1.6	Soil	16/11/18		Plastic Jar	1												X	
	LPI MW31_1.9-2.0	Soil	16/11/18		Plastic Jar	1												X	
	LPI MW31_2.9-3.0	Soil	16/11/18		Plastic Jar	1	X												
	LPI MW31_5.9-6.0	Soil	16/11/18		Plastic Jar	1												X	
	LPI MW31_8.4-8.5	Soil	16/11/18		Plastic Jar	1												X	
	LPI MW31 8.9-9.0	Soil	16/11/18		Plastic Jar	1												X	
	RW SS01_0.1	Soil	14/11/18		Plastic Jar	1	X												
	RW SS01_0.2	Soil	14/11/18		Plastic Jar	1												X	
	RW SS02_0.1	Soil	14/11/18		Plastic Jar	1												X	
	RW SS02_0.2	Soil	14/11/18		Plastic Jar	1	X												

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. *Soil Container Codes:* Jar = Unpreserved glass jar

COC Page 1 of 7 | 16

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE:	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK COI 60588844	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date)	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note, S = Soil, W=Water)					CONTAINER INFORMATION		BP231X											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles												HOLD
	RW SS03_0.1	Soil	14/11/18		Plastic Jar	1	X											
	RW SS03_0.2	Soil	14/11/18		Plastic Jar	1												x
	RW SS04_0.1	Soil	20/11/18		Plastic Jar	1												x
	RW SS04_0.2	Soil	20/11/18		Plastic Jar	1	X											
	LP SS01_0.1	Soil	16/11/18		Plastic Jar	1	X											
	LP SS01_0.2	Soil	16/11/18		Plastic Jar	1												x
	LP SS02_0.1	Soil	16/11/18		Plastic Jar	1												x
	LP SS02_0.2	Soil	16/11/18		Plastic Jar	1	X											
	LP SS03_0.1	Soil	16/11/18		Plastic Jar	1	X											
	LP SS03_0.2	Soil	16/11/18		Plastic Jar	1												x
	LP SS04_0.1	Soil	17/11/18		Plastic Jar	1	X											
	LP SS04_0.2	Soil	17/11/18		Plastic Jar	1												x
	LP SS05_0.1	Soil	17/11/18		Plastic Jar	1												x
	LP SS05_0.2	Soil	17/11/18		Plastic Jar	1	X											
	LP SS06_0.1	Soil	17/11/18		Plastic Jar	1	X											
	LP SS06_0.2	Soil	17/11/18		Plastic Jar	1												x
	LP SS07_0.1	Soil	17/11/18		Plastic Jar	1												x
	LP SS07_0.2	Soil	17/11/18		Plastic Jar	1	X											
	LP SS08_0.1	Soil	17/11/18		Plastic Jar	1												x

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

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic.
V = VOA Vial HCl Preserved, VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic.
F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. Soil Container Codes: Jar = Unpreserved glass jar

ANZ

FQM - Generic Chain of Custody Form

AECOM

Q4AN(EV)-007-FM1

CONSULTANT: AECOM Australia Pty Ltd	ADDRESS / OFFICE:	SAMPLER: Luke McIver	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE:	MOBILE: (04)34370048 PHONE (02)66554253	ALS BRISBANE
PROJECT NUMBER & TASK CO: 60588644	P.O. NO.:	EMAIL REPORT TO: james.peachey@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

[redacted]

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		EP231X												HOLD	Notes: e.g. Highly contaminated sample e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles														
	EP SS06_0.2	Soil	17/11/18		Plastic Jar	1	X												2	
	EWHEQ SS01_0.1	Soil	19/11/18		Plastic Jar	1	X												2	
	EWHEQ SS01_0.2	Soil	19/11/18		Plastic Jar	1													x	
	EWHEQ SS02_0.1	Soil	19/11/18		Plastic Jar	1	X												2	
	EWHEQ SS03_0.1	Soil	19/11/18		Plastic Jar	1	X												2	
	EWHEQ SS03_0.2	Soil	19/11/18		Plastic Jar	1													x	
	EWHEQ SS04_0.1	Soil	19/11/18		Plastic Jar	1													x	
	EWHEQ SS04_0.2	Soil	19/11/18		Plastic Jar	1	X												2	
	EWHEQ SS05_0.1	Soil	19/11/18		Plastic Jar	1	X												2	
	EWHEQ SS05_0.2	Soil	19/11/18		Plastic Jar	1													x	
	EWHEQ SS06_0.1	Soil	19/11/18		Plastic Jar	1	X												2	
	EWHEQ SS06_0.2	Soil	19/11/18		Plastic Jar	1													x	
	EWHEQ SS07_0.1	Soil	19/11/18		Plastic Jar	1													x	
	EWHEQ SS07_0.2	Soil	19/11/18		Plastic Jar	1	X												2	
	EWHEQ SS08_0.1	Soil	19/11/18		Plastic Jar	1													x	
	EWHEQ SS08_0.2	Soil	19/11/18		Plastic Jar	1	X												2	

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name Luke McIver	Date: 20 Nov 2018	Name:	Date:	Name:	Date:	Con' Note No:
Of: AECOM Australia Pty Ltd	Time:	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. *Soil Container Codes:* Jar = Unpreserved glass jar

CHAIN OF CUSTODY

Submitted to Australian Laboratory Services (Brisbane)
7 Pyth St, Stafford 4053. (Corner of Pyth & Shand Streets). Phone: 07 3243 7222

CLIENT: AECOM (Brisbane Office)
OFFICE: Brisbane Level 8 - 540 Wickham Street Fortitude Valley QLD 4006
PROJECT: 60598544 Project Sam
ORDER NUMBER: [redacted]
PROJECT MANAGER: [redacted] James Peachey
SAMPLER: [redacted] Tribute Mueller
COC emailed to ALS? Circle (YES / NO)
Email Reports to: [redacted] James.Peachey@aecom.com
Email Invoice to: project.manager@aecom.com

TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date): Non Standard TAT:
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
ALS QUOTE NO.: [redacted]
CONTACT PH: [redacted] 07 3553 3909.
SAMPLER MOBILE: [redacted] 0439144297
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY: Sample Signature
DATE/TIME:
RECEIVED BY:
DATE/TIME:
RELINQUISHED BY:
DATE/TIME:
RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) (Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required))								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231X - PFAS - Full Suite (28 analytes)) Sydney	EP231X (TOPA) PFAS - Full Suite TOPA (28 analytes))	HOLD						
	RWW-MW01-20181118	18-11-2018	W	1P	1	X								
	RWW-MW02-20181118					X								
	RWW-MW03-20181118					X								
	RWW-MW04-20181118					X								
	RWW-MW05-20181118					X								
	RWW-MW06-20181119	19-11-18				X								
	RWW-MW07-20181118	18-11-18				X								
	RWW-MW08-20181118	18-11-18				X								
	QC307-181111	11-11-18				X								
	QC308-181112	12-11-18				X								
	QC309-181115	15-11-18				X								
	QC310-181118	18-11-18				X								
					12									

10/16

CHAIN OF CUSTODY

Submitted to Australian Laboratory Services (Brisbane)
2 Byth St, Stafford 4053. (Corner of Byth & Shand Streets). Phone: 07 3243 7222

CLIENT: AECOM (Brisbane Office)	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Standard TAT (List due date):	Non Standard TAT:	FOR LABORATORY USE ONLY (Circle)
OFFICE: Brisbane Level 8 - 540 Wickham Street Fortitude Valley QLD 4006			Custody Seal Intact? Yes No N/A
PROJECT: Project Sam	ALS QUOTE NO.: [redacted]		Free Ice / Chilled Ice Packs present upon receipt? Yes No N/A
ORDER NUMBER: [redacted] 605955844		COC SEQUENCE NUMBER (Circle) OOC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: [redacted] James Hatchey	CONTACT PH: [redacted] 07 3553 3909.		Other comment:
SAMPLER: [redacted] Gabrielle Mellor	SAMPLER MOBILE: [redacted] 0439114797	RELINQUISHED BY: Sample Signature	RECEIVED BY:
COC emailed to ALS? Circle (YES / NO)	EDD FORMAT (or default):	DATE/TIME:	DATE/TIME:
Email Reports to: [redacted] projectmanager@aecom.com	James.Peachey@aecom.com	RELINQUISHED BY:	RECEIVED BY:
Email Invoices to: [redacted] projectmanager@aecom.com		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231X - PFAS - Full Suite (28 analytes) Super Trace	EP231X (TOPA) PFAS Full Suite TOPA (28 analytes))							
	QC311-181119GM	19-11-18	W	IP	1	X			X					
	QC31-181119LM	19-11-18	W	IP.	1	X			X					
				TOTAL	2									

11/12

CHAIN OF CUSTODY

Submitted to: Australian Laboratory Services (Brisbane)
2 Byth St, Stafford 4053. (Corner of Byth & Shand Streets) Phone: 07 3243 7222

CLIENT: AECOM (Brisbane Office)	**TURNAROUND REQUIREMENTS:** ☐ Standard TAT (List due date):	Non Standard TAT:	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Brisbane Level 8 - 540 Wickham Street Fortitude Valley QLD 4006	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A
PROJECT: Project Sam	**ALS QUOTE NO.:** [redacted]	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: [redacted] 605958644		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: C
PROJECT MANAGER: [redacted] James Peachey	**CONTACT PH:** [redacted] 07 3553 3909.	OF: 1 2 3 4 5 6 7	Other comments:
SAMPLER: [redacted] Gabrielle Mueller	**SAMPLER MOBILE:** [redacted] 0439041297	**RELINQUISHED BY:** Sample Signature	**RECEIVED BY:**
COC emailed to ALS? Circle (YES / NO)	**EDD FORMAT (or default):**	DATE/TIME:	DATE/TIME:
Email Reports to: [redacted] James.Peachey@aecom.com		**RELINQUISHED BY:**	**RECEIVED BY:**
Email Invoice to: project.manager@aecom.com		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231X - PFAS - Full Suite (28 analytes)	EP231X (TOPA) PFAS - Full Suite TOPA (28 analytes)		HOLD					
	ELS_SS04_0.2	17-11-18	S	Plastic Jar	1	X			X					
	ELS_SS03_0.1	16-11-18			1	X			X					
	ELS_SS02_0.1	17-11-18			1				X					
	ELS_SS02_0.2	17-11-18			1	X			X					
	ELS_SS01_0.1	17-11-18			1	X			X					
	AHEQ_SS07_0.1	14-11-18			1				X					
	AHEQ_SS07_0.2				1	X			X					
	AHEQ_SS06_0.1				1	X			X					
	AHEQ_SS06_0.2				1				X					
	AHEQ_SS05_0.1				1	X			X					
	AHEQ_SS05_0.2				1				X					
	AHEQ_SS04_0.1				1	X			X					
	[redacted]				12.				12.					

12/16

CHAIN OF CUSTODY

Submitted to: Australian Laboratory Services (Brisbane)
2 Byth St Stafford 4053, (Corner of Byth & Shand Streets). Phone: 07 3243 7222

CLIENT: AECOM (Brisbane Office)	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Standard TAT (List due date): Non Standard TAT:	FOR LABORATORY USE ONLY (Circle): Custody Seal Intact? Yes No N/A; Free ice / frozen ice bricks present upon receipt? Yes No N/A; Random Sample Temperature on Receipt: °C; Other comment:
OFFICE: Brisbane Level 8 - 540 Wickham Street Fortitude Valley QLD 4006		
PROJECT: Project San	ALS QUOTE NO.: [redacted]	COC SEQUENCE NUMBER (Circle): COC: 1 2 3 4 5 6 7; OF: 1 2 3 4 5 6 7
ORDER NUMBER: [redacted] 60588844		
PROJECT MANAGER: [redacted] James Peachey	CONTACT PH: [redacted] 07 3553 3909.	
SAMPLER: [redacted] Gabrielle Miller	SAMPLER MOBILE: [redacted] 0439174797	RELINQUISHED BY: Sample Signature; RECEIVED BY:; RELINQUISHED BY:; RECEIVED BY:
COC emailed to ALS? Circle (YES / NO)	EDD FORMAT (or default):	DATE/TIME:; DATE/TIME:; DATE/TIME:; DATE/TIME:
Email Reports to: [redacted] James.Peachey@aecom.com		
Email Invoice to: project.manager@aecom.com		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unPreserved bottle required) or Dissolved (field filtered bottle required)								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231X - PFAS - Full Suite (28 analytes))	EP231X (TOPA) PFAS - Full Suite TOPA (28 analytes))		HOLD					
	AP_SS02_0.1	17-11-18	S	Plastic Jar	1	X			X					
	AP_SS02_0.2	17-11-18							X					
	AP_SS01_0.1	16-11-18							X					
	AP_SS01_0.2	16-11-18				X			X					
	ELN_SS03_0.1	16-11-18				X			X					
	ELN_SS03_0.2	16-11-18							X					
	ELN_SS02_0.1	16-11-18				X			X					
	ELN_SS01_0.1	16-11-18							X					
	ELN_SS01_0.2	16-11-18				X			X					
	ELS_SS05_0.1	17-11-18							X					
	ELS_SS05_0.2	17-11-18				X			X					
	ELS_SS04_0.1	17-11-18	↓	↓	↓	X			X					
					TOTAL	12			12.					

13/16

CHAIN OF CUSTODY

Submitted to: Australian Laboratory Services (Brisbane)
2 Byth St, Stafford 4053. (Corner of Byth & Shand Streets) Phone: 07 3243 7222

CLIENT: AECOM (Brisbane Office)	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): Non Standard TAT: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		FOR LABORATORY USE ONLY (Circle): Custody Seal Intact? Yes No N/A; Free ice / Frozen ice bricks present upon receipt? Yes No N/A; Random Sample Temperature on Receipt: 0; Other comment:
OFFICE: Brisbane Level 8 - 540 Wickham Street Fortitude Valley QLD 4006			
PROJECT: Project San	ALS QUOTE NO.: EM [illegible]	CDC SEQUENCE NUMBER (Circle): COC: 1 2 3 4 5 6 7; OF: 1 2 3 4 5 6 7	
ORDER NUMBER: [illegible] 60585847			
PROJECT MANAGER: [illegible] James Peachey	CONTACT PH: [illegible] 07 3553 3909.		
SAMPLER: [illegible] Gabrielle Mawer	SAMPLER MOBILE: [illegible] 0439104297	RELINQUISHED BY: Sample Signature	RECEIVED BY:
COC emailed to ALS? Circle (YES / NO)	EDD FORMAT (or default):	DATE/TIME:	DATE/TIME:
Email Reports to: [illegible] James.Peachey@aecom.com		RELINQUISHED BY:	RECEIVED BY:
Email Invoice to: project.manager@aecom.com		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231X - PFAS - Full Suite - (28 analytes))	EP231X (TOPA) PFAS - Full Suite TOPA (28 analytes))		HOLD					
	AP_SS08_0.1	16-11-18	S	Plastic Jar	1	X			X					
	AP_SS08_0.2	16-11-18	S						X					
	AP_SS05_0.1	16-11-18							X					
	AP_SS05_0.2	16-11-18				X			X					
	AP_SS07_0.1	17-11-18				X			X					
	AP_SS07_0.2	17-11-18							X					
	AP_SS06_0.1	17-11-18							X					
	AP_SS06_0.2	17-11-18				X			X					
	AP_SS04_0.1	17-11-18				X			X					
	AP_SS04_0.2	17-11-18							X					
	AP_SS03_0.1	17-11-18				X			X					
	AP_SS03_0.2	17-11-18	↓	↓	↓				X					
					TOTAL	12			12.					

14/16

CHAIN OF CUSTODY

Submitted to Australian Laboratory Services (Brisbane)
2 Byth St. Stafford 4053 (Corner of Byth & Sharid Streets). Phone: 07 3243 7222

CLIENT: AECOM (Brisbane Office)
OFFICE: Brisbane Level 8 - 540 Wickham Street Fortitude Valley QLD 4006
PROJECT: Project Jam
ORDER NUMBER: 60558849
PROJECT MANAGER: James Peachey
SAMPLER: Gabrielle Mueller
COC emailed to ALS? Circle (YES / NO)
Email reports to: [redacted] James.Peachey@aecom.com
Email invoice to: [redacted]

TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): Non Standard TAT:
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
ALS QUOTE NO.: [redacted]
CONTACT PH: 07 3553 3909.
SAMPLER MOBILE: [redacted] 0439104297
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free Ice / Ambient Ice (where payment apply) Yes No N/A
Random Sample Temperature on Receipt °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Sample Signature			
DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS (MATRIX: Solid(S) Water(W))			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) (Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required))								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231X - PFAS - Full Suite (28 analytes)	EP231X (TOPA) PFAS - Full Suite TOPA (28 analytes)		HOLD					
	QC206_20181116	16-11-2018	S	Plastic Jar	1				X					Separate CoC for NMI attached.
	QC106_20181116	16-11-2018				X								*Please forward to NMI
	QC107-181116	16-11-2018							X					
	QC207-181116	16-11-2018							X					
	QC108-181117	17-11-2018				X								*Please forward to NMI
	QC208-181117	17-11-2018							X					
	QC209-181117	17-11-2018							X					*Please forward to N
	QC109 181117	17-11-2018				X								*Please forward to N
	QC210-181118	18-11-2018							X					
	QC110-181118	18-11-2018				X								*Please forward to N
					TOTAL	10								

15/16

CHAIN OF CUSTODY

Submitted to: Australian Laboratory Services (Brisbane)
2 Byth St Stafford 4053 (Corner of Byth & Shand Streets). Phone: 07 3243 7222

CLIENT: AECOM (Brisbane Office)	TURNAROUND REQUIREMENTS - (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Standard TAT (List due date): Non Standard TAT:	FOR LABORATORY USE ONLY (Circle) Quarantine Seal Intact? Yes No N/A	
OFFICE: Brisbane Level 8 - 540 Wickham Street Fortitude Valley QLD 4006		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
PROJECT: Project San	ALS QUOTE NO.: [redacted]	Random Sample Temperature on Receipt: °C	
ORDER NUMBER: [redacted] Task XX 60588844	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	Other comments:	
PROJECT MANAGER: [redacted] James Reichey	CONTACT PH: [redacted] 07 3553 3909.		
SAMPLER: [redacted] Gabrielle Mueller	SAMPLER MOBILE: [redacted] 0439174797	RELINQUISHED BY: Sample Signature	RECEIVED BY:
COC emailed to ALS? Circle (YES / NO)	EDD FORMAT (or default):	DATE/TIME:	DATE/TIME:
Email Reports to: [redacted] kim.e.reichey@aecom.com		RELINQUISHED BY:	RECEIVED BY:
Email Invoice to: [redacted]		DATE/TIME:	DATE/TIME:
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:			

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231X - PFAS - Full Suite (28 analytes)	EP231X (TOPA) PFAS - Full Suite TOPA (28 analytes)		HOLD					
	AMEQ_SS04_0.2	14-11-18	S	Plastic Jar	1	X								Separate CoC + label for NMI attached.
	AMEQ_SS03_0.1					X								
	AMEQ_SS03_0.2													
	AMEQ_SS02_0.1								X					
	AMEQ_SS02_0.2					X								
	AMEQ_SS01_0.1								X					
	AMEQ_SS01_0.2	↓				X								
	QC04_181112	12-11-18							X					
	QC04_181112	12-11-18				X								
	ELS_SS03_0.2	16-11-18							X					#Please forward to NMI
	QC05_20181115	15-11-18				X								
	QC05_20181115	15-11-18	↓	↓	↓				X					#Please forward to NMI
					TOTAL	12			12 -					

16/16

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1835146**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: james.peachey@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Facsimile	: +61 07 3553 2050	Facsimile	: +61-2-8784 8500
Project	: 60588844	Page	: 1 of 5
Order number	: 60588844	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PROJECT SAM		
Sampler	: LUKE McLVER		

Dates

Date Samples Received	: 22-Nov-2018 13:00	Issue Date	: 26-Nov-2018
Client Requested Due Date	: 03-Dec-2018	Scheduled Reporting Date	: **03-Dec-2018**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 6	Temperature	: 26'C
Receipt Detail	:	No. of samples received / analysed	: 113 / 28

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order has split into ES1835147 due to number of samples.**
- **Sample AFD MW37_0.0_0.1 was received extra and placed on hold.**
- **Sample DI on COC's AHEQ MW08_8.9-9.0 was printed twice.**
- **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.**

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

ES1835146-094 : [18-Nov-2018] : AWHEQ MW09_12.1-12.2

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	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1835146-001	14-Nov-2018 00:00	EWHEQ MW06_0.4-0.5		✓	✓
ES1835146-002	14-Nov-2018 00:00	EWHEQ MW06_0.9-1.0	✓		
ES1835146-003	14-Nov-2018 00:00	EWHEQ MW06_1.4-1.5		✓	✓
ES1835146-004	14-Nov-2018 00:00	EWHEQ MW06_1.9-2.0	✓		
ES1835146-005	14-Nov-2018 00:00	EWHEQ MW06_2.9-3.0	✓		
ES1835146-006	14-Nov-2018 00:00	EWHEQ MW06_5.9-6.0	✓		
ES1835146-007	14-Nov-2018 00:00	EWHEQ MW06_10.4-10.5	✓		
ES1835146-008	14-Nov-2018 00:00	EWHEQ MW07_0.4-0.5	✓		
ES1835146-009	14-Nov-2018 00:00	EWHEQ MW07_0.9-1.0		✓	✓
ES1835146-010	14-Nov-2018 00:00	EWHEQ MW07_1.4-1.5		✓	✓
ES1835146-011	14-Nov-2018 00:00	EWHEQ MW07_1 .9-2 .0	✓		
ES1835146-012	14-Nov-2018 00:00	EWHEQ MW07_2.9-3.0	✓		
ES1835146-013	14-Nov-2018 00:00	EWHEQ MW07_5 9-6.0	✓		
ES1835146-014	14-Nov-2018 00:00	EWHEQ MW07_0.9-9.0	✓		
ES1835146-015	14-Nov-2018 00:00	EWHEQ MW07_11.9-12.0	✓		
ES1835146-016	15-Nov-2018 00:00	ELS MW29_0.4-0.5		✓	✓
ES1835146-017	15-Nov-2018 00:00	ELSMW29_0.9-1.0	✓		
ES1835146-018	15-Nov-2018 00:00	ELS MW29_1.4-1.5		✓	✓
ES1835146-019	14-Nov-2018 00:00	ELS MW29_1.9-2.0	✓		
ES1835146-020	16-Nov-2018 00:00	ELSMW29_2.9-3.0	✓		
ES1835146-021	16-Nov-2018 00:00	ELS MW29_5.9-6.0	✓		
ES1835146-022	16-Nov-2018 00:00	ELS MW29_8.9-9.0	✓		
ES1835146-023	16-Nov-2018 00:00	ELN MW10_0.4-0.5		✓	✓
ES1835146-024	16-Nov-2018 00:00	BLN MW10_0.9-1.0		✓	✓
ES1835146-025	16-Nov-2018 00:00	ELN MW10 _1.4-1.5	✓		
ES1835146-026	16-Nov-2018 00:00	ELN MW10_1.9-2.0		✓	✓
ES1835146-027	16-Nov-2018 00:00	ELN MW10-2.9·3 0		✓	✓
ES1835146-028	16-Nov-2018 00:00	ELN MW10_5.9-6.0	✓		
ES1835146-029	16-Nov-2018 00:00	ELN MW10_8.9-9.0	✓		
ES1835146-030	16-Nov-2018 00:00	ELN MW10 _10.9-11.0	✓		
ES1835146-031	15-Nov-2018 00:00	ELN MW09_0.4-0.5		✓	✓
ES1835146-032	15-Nov-2018 00:00	ELN MW09_0.9-1 .0	✓		
ES1835146-033	15-Nov-2018 00:00	ELN MW09_1.4-1.5		✓	✓

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1835146-034	17-Nov-2018 00:00	ELN MW09_1.9-2.0	✓		
ES1835146-035	17-Nov-2018 00:00	ELN MW09_2.9-3.0	✓		
ES1835146-036	17-Nov-2018 00:00	ELN MW09_5.9-6.0	✓		
ES1835146-037	17-Nov-2018 00:00	ELN MW09_7.0-7.1	✓		
ES1835146-038	17-Nov-2018 00:00	ELN MW09_8.9-9.0	✓		
ES1835146-039	14-Nov-2018 00:00	ELN MW09_10.9-11.0	✓		
ES1835146-040	15-Nov-2018 00:00	ELS MW28_0.4-0.5		✓	✓
ES1835146-041	15-Nov-2018 00:00	ELS MW28_0.9-1.0	✓		
ES1835146-042	15-Nov-2018 00:00	ELS MW28_1.4-1.5	✓		
ES1835146-043	17-Nov-2018 00:00	ELS MW28_2.9-3.0	✓		
ES1835146-044	17-Nov-2018 00:00	ELS MW28_5.9-6.0	✓		
ES1835146-045	17-Nov-2018 00:00	ELS MW28_7 0-7. 1	✓		
ES1835146-046	17-Nov-2018 00:00	ELS MW28_8.9-9.0	✓		
ES1835146-047	14-Nov-2018 00:00	ELS MW28_10.4-10.5		✓	✓
ES1835146-048	14-Nov-2018 00:00	AHEQ MW08_0.0-0 1	✓		
ES1835146-049	12-Nov-2018 00:00	AHEQ MW08_0.4-0.5		✓	✓
ES1835146-050	12-Nov-2018 00:00	AHEQ MW08 _09-1.0	✓		
ES1835146-051	12-Nov-2018 00:00	AHEO MW08_1.4-1.5		✓	✓
ES1835146-052	12-Nov-2018 00:00	AHEQ MW08_1.9-2.0	✓		
ES1835146-053	12-Nov-2018 00:00	AHEQ MW08_2.9-3.0	✓		
ES1835146-054	12-Nov-2018 00:00	AHEO MW08_5.9-6.0	✓		
ES1835146-055	14-Nov-2018 00:00	AHEQ MW08_6.8-6.9	✓		
ES1835146-056	12-Nov-2018 00:00	AHEQ MW08_8.9_9.0	✓		
ES1835146-058	12-Nov-2018 00:00	AHEQ MW06_11.9-12.0	✓		
ES1835146-059	12-Nov-2018 00:00	AHEQ MW07_0.0-0.1	✓		
ES1835146-060	12-Nov-2018 00:00	AHEQ MW07_0.4-0.5		✓	✓
ES1835146-061	12-Nov-2018 00:00	AHEQ MW07_0.9-1.0	✓		
ES1835146-062	12-Nov-2018 00:00	AHEQ MW07_1.4-1.5	✓		
ES1835146-063	12-Nov-2018 00:00	AHEQ MW07_1.9-2.0	✓		
ES1835146-064	12-Nov-2018 00:00	AHEQ MW07_2.9-3.0	✓		
ES1835146-065	12-Nov-2018 00:00	AHEQ MW07_5.9-6.0	✓		
ES1835146-066	14-Nov-2018 00:00	AHEQ MW07_7.2-7.3		✓	✓
ES1835146-067	12-Nov-2018 00:00	AHEQ MW07_8.9-9.0	✓		
ES1835146-068	12-Nov-2018 00:00	AHEQ MW07_11.9-12.0	✓		
ES1835146-069	12-Nov-2018 00:00	AHEQ MW10_0.0-0.1	✓		
ES1835146-070	12-Nov-2018 00:00	AHEO MW10_0.4-0.5	✓		
ES1835146-071	12-Nov-2018 00:00	AHEQ MW10_0.9-1.0		✓	✓
ES1835146-072	12-Nov-2018 00:00	AHEQ MW10_1.4-1.5	✓		
ES1835146-073	12-Nov-2018 00:00	AHEQ MW10_1.9-2.0	✓		
ES1835146-074	12-Nov-2018 00:00	AHEQ MW10_2.9-3.0		✓	✓
ES1835146-075	12-Nov-2018 00:00	AHEQ MW10_5.9-6.0	✓		

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1835146-076	12-Nov-2018 00:00	AHEQ MW10_8.9-9.0	✓		
ES1835146-077	12-Nov-2018 00:00	AHEQ MW10_11.9-12.0	✓		
ES1835146-078	12-Nov-2018 00:00	AHEO MW11_0.4-0.5	✓		
ES1835146-079	12-Nov-2018 00:00	AHEQ MW11_0.9-1.0		✓	✓
ES1835146-080	12-Nov-2018 00:00	AHEQ MW11_1.4-1.5	✓		
ES1835146-081	13-Nov-2018 00:00	AHEQ MW11_1.9-2.0	✓		
ES1835146-082	13-Nov-2018 00:00	AHEQ MW11_2.9-3.0		✓	✓
ES1835146-083	13-Nov-2018 00:00	AHEQ MW11_5.9-6.0	✓		
ES1835146-084	13-Nov-2018 00:00	AHEQ MW11_9.9-10.0	✓		
ES1835146-085	13-Nov-2018 00:00	AHEQ MW11_14.9-15.0	✓		
ES1835146-086	15-Nov-2018 00:00	AHEQ MW09_0.4-0.5		✓	✓
ES1835146-087	15-Nov-2018 00:00	AHEQ MW09_0.9-1.0	✓		
ES1835146-088	15-Nov-2018 00:00	AHEQ MW09_1.4-1.5	✓		
ES1835146-089	18-Nov-2018 00:00	AWHEQ MW09_1.9-2.0	✓		
ES1835146-090	18-Nov-2018 00:00	AWHEQ MW09_2.9-3.0	✓		
ES1835146-091	18-Nov-2018 00:00	AWHEQ MW09_5.9-6.0	✓		
ES1835146-092	18-Nov-2018 00:00	AWHEQ MW09_8.9-9.0	✓		
ES1835146-093	18-Nov-2018 00:00	AWHEQ MW09_11.9-12.0	✓		
ES1835146-094	18-Nov-2018 00:00	AWHEQ MW09_12.1-12.2		✓	✓
ES1835146-095	18-Nov-2018 00:00	AWHEQ MW09_14.9-15.0	✓		
ES1835146-096	16-Nov-2018 00:00	AP MW2_0.4-0.5		✓	✓
ES1835146-097	16-Nov-2018 00:00	AP MW02_0.9-1.0	✓		
ES1835146-098	16-Nov-2018 00:00	AP MW02_1.4-1.5		✓	✓
ES1835146-099	14-Nov-2018 00:00	AP MW02_1.9-2.0	✓		
ES1835146-100	17-Nov-2018 00:00	AP MW02_2.9-3.0	✓		
ES1835146-101	17-Nov-2018 00:00	AP MW02_5.9-6.0	✓		
ES1835146-102	17-Nov-2018 00:00	AP MW02_7.0-7.1	✓		
ES1835146-103	17-Nov-2018 00:00	AP MW02_11.9-12.0	✓		
ES1835146-104	16-Nov-2018 00:00	AP MW01_0.4-0.5	✓		
ES1835146-105	16-Nov-2018 00:00	AP MW01_0.9-1.0		✓	✓
ES1835146-106	16-Nov-2018 00:00	AP MW01_1.4-1.5	✓		
ES1835146-107	17-Nov-2018 00:00	AP MW01_1.9-2.0	✓		
ES1835146-108	17-Nov-2018 00:00	AP MW01_2.9-3.0	✓		
ES1835146-109	17-Nov-2018 00:00	AP MW01_5.9-6.0	✓		
ES1835146-110	17-Nov-2018 00:00	AP MW01_8.9-9.0	✓		
ES1835146-111	17-Nov-2018 00:00	AP MW01_9.1-9.2		✓	✓
ES1835146-112	17-Nov-2018 00:00	AP MW01_11.9-12.0	✓		
ES1835146-113	13-Nov-2018 00:00	AFD MW37_0.4-0.5	✓		
ES1835146-114	13-Nov-2018 00:00	AFD MW37_0.0_0.1	✓		

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

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

CORINA JAKOHI

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

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1835146**	Page	: 1 of 15
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 22-Nov-2018 13:00
Order number	: 60588844	Date Analysis Commenced	: 28-Nov-2018
C-O-C number	: ----	Issue Date	: 20-Dec-2018 16:18
Sampler	: LUKE McLVER		
Site	: PROJECT SAM		
Quote number	: EN/004/16		
No. of samples received	: 113		
No. of samples analysed	: 28		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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.

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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.

- Amendment (20/12/2018): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Gabrielle Mueller on 20/12/18. All analysis results are as per the previous report.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EWHEQ MW06_0.4-0.5	EWHEQ MW06_1.4-1.5	EWHEQ MW07_0.9-1.0	EWHEQ MW07_1.4-1.5	ELS MW29_0.4-0.5
				14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	15-Nov-2018 00:00
				ES1835146-001	ES1835146-003	ES1835146-009	ES1835146-010	ES1835146-016
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**11.2**	**14.7**	**11.4**	**15.6**	**11.3**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	**0.0004**	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	**0.0007**	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0004**	**0.0068**	**0.0007**	**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	**0.0060**	**0.0067**	**0.0012**	**0.0007**	<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	**0.0029**	**0.0020**	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0022**	**0.0016**	**0.0002**	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0007**	**0.0003**	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0012**	**0.0006**	<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)				EWHEQ MW06_0.4-0.5	EWHEQ MW06_1.4-1.5	EWHEQ MW07_0.9-1.0	EWHEQ MW07_1.4-1.5	ELS MW29_0.4-0.5
				14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	15-Nov-2018 00:00
				ES1835146-001	ES1835146-003	ES1835146-009	ES1835146-010	ES1835146-016
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	**0.0035**	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	**0.0061**	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	**0.0006**	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0236**	**0.0191**	**0.0021**	**0.0009**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0064**	**0.0135**	**0.0019**	**0.0009**	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0230**	**0.0184**	**0.0021**	**0.0009**	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**80.5**	**62.0**	**66.0**	**66.5**	**86.5**
13C8-PFOA	----	0.0002	%	**76.5**	**62.0**	**60.5**	**60.5**	**76.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				ELS MW29_1.4-1.5	ELN MW10_0.4-0.5	ELN MW10_0.9-1.0	ELN MW10_1.9-2.0	ELN MW10-2.9-3 0
				15-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835146-018	ES1835146-023	ES1835146-024	ES1835146-026	ES1835146-027
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**10.3**	**13.5**	**17.7**	**9.3**	**8.8**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0041**	**0.0008**	<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)				ELS MW29_1.4-1.5	ELN MW10_0.4-0.5	ELN MW10_0.9-1.0	ELN MW10_1.9-2.0	ELN MW10-2.9·3 0
				15-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835146-018	ES1835146-023	ES1835146-024	ES1835146-026	ES1835146-027
				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	**0.0041**	**0.0010**	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	**0.0041**	**0.0008**	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	**0.0041**	**0.0010**	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**64.5**	**76.0**	**84.5**	**76.0**	**75.5**
13C8-PFOA	----	0.0002	%	**71.0**	**67.0**	**77.0**	**65.5**	**67.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				ELN MW09_0.4-0.5	ELN MW09_1.4-1.5	ELS MW28_0.4-0.5	ELS MW28_10.4-10.5	AHEQ MW08_0.4-0.5
				15-Nov-2018 00:00	15-Nov-2018 00:00	15-Nov-2018 00:00	14-Nov-2018 00:00	12-Nov-2018 00:00
				ES1835146-031	ES1835146-033	ES1835146-040	ES1835146-047	ES1835146-049
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**14.8**	**12.2**	**20.0**	**28.8**	**13.6**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
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)				ELN MW09_0.4-0.5	ELN MW09_1.4-1.5	ELS MW28_0.4-0.5	ELS MW28_10.4-10.5	AHEQ MW08_0.4-0.5
				15-Nov-2018 00:00	15-Nov-2018 00:00	15-Nov-2018 00:00	14-Nov-2018 00:00	12-Nov-2018 00:00
				ES1835146-031	ES1835146-033	ES1835146-040	ES1835146-047	ES1835146-049
				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	**0.0004**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**78.0**	**92.0**	**82.5**	**66.0**	**74.5**
13C8-PFOA	----	0.0002	%	**71.0**	**83.0**	**81.5**	**64.0**	**67.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AHEQ MW08_1.4-1.5	AHEQ MW07_0.4-0.5	AHEQ MW07_7.2-7.3	AHEQ MW10_0.9-1.0	AHEQ MW10_2.9-3.0
				12-Nov-2018 00:00	12-Nov-2018 00:00	14-Nov-2018 00:00	12-Nov-2018 00:00	12-Nov-2018 00:00
				ES1835146-051	ES1835146-060	ES1835146-066	ES1835146-071	ES1835146-074
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**18.9**	**12.2**	**28.7**	**13.0**	**12.3**
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	**0.0006**	<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	**0.0070**	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	**0.0003**	<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	**0.0010**	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	**0.0008**	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	**0.0010**	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	**0.0006**	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	**0.0003**	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<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)				AHEQ MW08_1.4-1.5	AHEQ MW07_0.4-0.5	AHEQ MW07_7.2-7.3	AHEQ MW10_0.9-1.0	AHEQ MW10_2.9-3.0
				12-Nov-2018 00:00	12-Nov-2018 00:00	14-Nov-2018 00:00	12-Nov-2018 00:00	12-Nov-2018 00:00
				ES1835146-051	ES1835146-060	ES1835146-066	ES1835146-071	ES1835146-074
				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	**0.0116**	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	**0.0076**	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	**0.0110**	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**64.5**	**81.0**	**75.5**	**74.5**	**66.5**
13C8-PFOA	----	0.0002	%	**70.0**	**75.5**	**66.0**	**73.5**	**66.0**

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

				AHEQ MW11_0.9-1.0	AHEQ MW11_2.9-3.0	AHEQ MW09_0.4-0.5	AHEQ MW09_12.1-12.2	AP MW02_0.4-0.5
				12-Nov-2018 00:00	13-Nov-2018 00:00	15-Nov-2018 00:00	18-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835146-079	ES1835146-082	ES1835146-086	ES1835146-094	ES1835146-096
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**15.0**	**7.8**	**21.2**	**37.2**	**15.4**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
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)				AHEQ MW11_0.9-1.0	AHEQ MW11_2.9-3.0	AHEQ MW09_0.4-0.5	AHEQ MW09_12.1-12.2	AP MW02_0.4-0.5
				12-Nov-2018 00:00	13-Nov-2018 00:00	15-Nov-2018 00:00	18-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835146-079	ES1835146-082	ES1835146-086	ES1835146-094	ES1835146-096
				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	%	**64.0**	**64.5**	**77.5**	**82.5**	**71.5**
13C8-PFOA	----	0.0002	%	**70.0**	**60.0**	**73.5**	**75.0**	**65.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AP MW02_1.4-1.5	AP MW01_0.9-1.0	AP MW01_9.1-9.2	----	----
				16-Nov-2018 00:00	16-Nov-2018 00:00	17-Nov-2018 00:00	----	----
				ES1835146-098	ES1835146-105	ES1835146-111	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**10.5**	**12.0**	**24.9**	**----**	**----**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	**----**	**----**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	**----**	**----**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**----**	**----**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AP MW02_1.4-1.5	AP MW01_0.9-1.0	AP MW01_9.1-9.2	----	----
				16-Nov-2018 00:00	16-Nov-2018 00:00	17-Nov-2018 00:00	----	----
				ES1835146-098	ES1835146-105	ES1835146-111	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<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	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**71.0**	**73.5**	**69.5**	----	----
13C8-PFOA	----	0.0002	%	**65.5**	**70.5**	**63.5**	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
		Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1835146**	Page	: 1 of 10
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 22-Nov-2018
Order number	: 60588844	Date Analysis Commenced	: 28-Nov-2018
C-O-C number	: ----	Issue Date	: 20-Dec-2018
Sampler	: LUKE McLVER		
Site	: PROJECT SAM		
Quote number	: EN/004/16		
No. of samples received	: 113		
No. of samples analysed	: 28		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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: **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: 2062022)									
ES1835146-003	EWHEQ MW06_1.4-1.5	EA055: Moisture Content	----	0.1	%	14.7	14.3	2.71	0% - 20%
ES1835146-040	ELS MW28_0.4-0.5	EA055: Moisture Content	----	0.1	%	20.0	20.2	0.815	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2062023)									
ES1835146-082	AHEQ MW11_2.9-3.0	EA055: Moisture Content	----	0.1	%	7.8	8.2	3.98	0% - 20%
ES1835166-012	Anonymous	EA055: Moisture Content	----	0.1	%	5.3	5.3	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2058510)									
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0060	0.0057	4.62	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
ES1835146-031	ELN MW09_0.4-0.5	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: 2058560)									
ES1835146-079	AHEQ MW11_0.9-1.0	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

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: 2058560) - continued									
ES1835146-079	AHEQ MW11_0.9-1.0	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: 2058510)									
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0029	0.0028	5.36	0% - 50%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0022	0.0021	0.00	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0007	0.0006	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0012	0.0010	11.3	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
ES1835146-031	ELN MW09_0.4-0.5	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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2058560)									
ES1835146-079	AHEQ MW11_0.9-1.0	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2058510)									
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2058510) - continued									
ES1835146-001	EWHEQ MW06_0.4-0.5	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
ES1835146-031	ELN MW09_0.4-0.5	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: 2058560)									
ES1835146-079	AHEQ MW11_0.9-1.0	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2058510)									
ES1835146-001	EWHEQ MW06_0.4-0.5	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 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: 2058510) - continued									
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0035	0.0032	8.08	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0061	0.0053	13.4	0% - 50%
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0006	0.0007	0.00	No Limit
ES1835146-031	ELN MW09_0.4-0.5	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: 2058560)									
ES1835146-079	AHEQ MW11_0.9-1.0	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

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: 2058510)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.8	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.6	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	54	125
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2058560)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	67.6	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058510)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	72.0	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.8	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.7	59	129
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058560)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	58.2	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.2	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.6	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	62	130

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: 2058560) - continued								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.8	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058510)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.4	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	91.5	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.9	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	86.4	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	55	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058560)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	77.7	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	73.6	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.0	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	74.4	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	68.8	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058510)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.4	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	79.6	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.0	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058560)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	75.6	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.0	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.0	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.4	60	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: 2058510)							
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	86.4	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	106	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	83.2	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	82.4	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	87.2	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2058560)							
ES1835146-079	AHEQ MW11_0.9-1.0	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	70.8	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	71.6	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	63.2	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	91.6	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	91.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	91.2	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058510)							
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	67.8	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	84.0	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	102	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	88.4	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	95.6	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	94.8	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	91.6	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	103	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	83.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	104	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	87.0	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058560)							
ES1835146-079	AHEQ MW11_0.9-1.0	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	45.1	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	72.0	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	64.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	70.4	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	78.0	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	66.8	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	72.4	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: 2058560) - continued							
ES1835146-079	AHEQ MW11_0.9-1.0	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	74.8	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	82.8	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	72.8	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	69.7	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058510)							
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	95.6	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	101	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	97.8	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	97.6	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	88.5	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	102	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	99.2	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058560)							
ES1835146-079	AHEQ MW11_0.9-1.0	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	76.8	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	81.9	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	77.2	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	74.7	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	72.8	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	70.8	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	73.2	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058510)							
ES1835146-001	EWHEQ MW06_0.4-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	105	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	78.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	# Not Determined	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	107	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058560)							
ES1835146-079	AHEQ MW11_0.9-1.0	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	77.2	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*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058560) - continued							
ES1835146-079	AHEQ MW11_0.9-1.0	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	82.8	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	74.0	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	102	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1835146**	Page	: 1 of 10
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 22-Nov-2018
Site	: PROJECT SAM	Issue Date	: 20-Dec-2018
Sampler	: LUKE McLVER	No. of samples received	: 113
Order number	: 60588844	No. of samples analysed	: 28

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **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.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES1835146--001	EWHEQ MW06_0.4-0.5	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	ES1835146--001	EWHEQ MW06_0.4-0.5	**8:2 Fluorotelomer sulfonic acid (8:2 FTS)**	39108-34-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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 Soil Jar							
AHEQ MW08_0.4-0.5,	AHEQ MW08_1.4-1.5,	----	----	----	28-Nov-2018	26-Nov-2018	**2**
AHEQ MW07_0.4-0.5,	AHEQ MW10_0.9-1.0,						
AHEQ MW10_2.9-3.0,	AHEQ MW11_0.9-1.0						
HDPE Soil Jar							
AHEQ MW11_2.9-3.0		----	----	----	28-Nov-2018	27-Nov-2018	**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

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) AHEQ MW08_0.4-0.5, AHEQ MW08_1.4-1.5, AHEQ MW07_0.4-0.5, AHEQ MW10_0.9-1.0, AHEQ MW10_2.9-3.0, AHEQ MW11_0.9-1.0	**12-Nov-2018**	**----**	----	----	**28-Nov-2018**	26-Nov-2018	×
HDPE Soil Jar (EA055) AHEQ MW11_2.9-3.0	**13-Nov-2018**	**----**	----	----	**28-Nov-2018**	27-Nov-2018	×
HDPE Soil Jar (EA055) EWHEQ MW06_0.4-0.5, EWHEQ MW06_1.4-1.5, EWHEQ MW07_0.9-1.0, EWHEQ MW07_1.4-1.5, ELS MW28_10.4-10.5, AHEQ MW07_7.2-7.3	**14-Nov-2018**	**----**	----	----	**28-Nov-2018**	28-Nov-2018	✓
HDPE Soil Jar (EA055) ELS MW29_0.4-0.5, ELS MW29_1.4-1.5, ELN MW09_0.4-0.5, ELN MW09_1.4-1.5, ELS MW28_0.4-0.5, AHEQ MW09_0.4-0.5	**15-Nov-2018**	**----**	----	----	**28-Nov-2018**	29-Nov-2018	✓
HDPE Soil Jar (EA055) ELN MW10_0.4-0.5, ELN MW10_0.9-1.0, ELN MW10_1.9-2.0, ELN MW10-2.9·3 0, AP MW02_0.4-0.5, AP MW02_1.4-1.5, AP MW01_0.9-1.0	**16-Nov-2018**	**----**	----	----	**28-Nov-2018**	30-Nov-2018	✓
HDPE Soil Jar (EA055) AP MW01_9.1-9.2	**17-Nov-2018**	**----**	----	----	**28-Nov-2018**	01-Dec-2018	✓
HDPE Soil Jar (EA055) AHEQ MW09_12.1-12.2	**18-Nov-2018**	**----**	----	----	**28-Nov-2018**	02-Dec-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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X) AHEQ MW08_0.4-0.5, AHEQ MW08_1.4-1.5, AHEQ MW07_0.4-0.5, AHEQ MW10_0.9-1.0, AHEQ MW10_2.9-3.0, AHEQ MW11_0.9-1.0	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW11_2.9-3.0	**13-Nov-2018**	**29-Nov-2018**	12-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) EWHEQ MW06_0.4-0.5, EWHEQ MW06_1.4-1.5, EWHEQ MW07_0.9-1.0, EWHEQ MW07_1.4-1.5, ELS MW28_10.4-10.5, AHEQ MW07_7.2-7.3	**14-Nov-2018**	**29-Nov-2018**	13-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELS MW29_0.4-0.5, ELS MW29_1.4-1.5, ELN MW09_0.4-0.5, ELN MW09_1.4-1.5, ELS MW28_0.4-0.5, AHEQ MW09_0.4-0.5	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELN MW10_0.4-0.5, ELN MW10_0.9-1.0, ELN MW10_1.9-2.0, ELN MW10-2.9·3 0, AP MW02_0.4-0.5, AP MW02_1.4-1.5, AP MW01_0.9-1.0	**16-Nov-2018**	**29-Nov-2018**	15-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AP MW01_9.1-9.2	**17-Nov-2018**	**29-Nov-2018**	16-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW09_12.1-12.2	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓

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) AHEQ MW08_0.4-0.5, AHEQ MW08_1.4-1.5, AHEQ MW07_0.4-0.5, AHEQ MW10_0.9-1.0, AHEQ MW10_2.9-3.0, AHEQ MW11_0.9-1.0	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW11_2.9-3.0	**13-Nov-2018**	**29-Nov-2018**	12-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) EWHEQ MW06_0.4-0.5, EWHEQ MW06_1.4-1.5, EWHEQ MW07_0.9-1.0, EWHEQ MW07_1.4-1.5, ELS MW28_10.4-10.5, AHEQ MW07_7.2-7.3	**14-Nov-2018**	**29-Nov-2018**	13-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELS MW29_0.4-0.5, ELS MW29_1.4-1.5, ELN MW09_0.4-0.5, ELN MW09_1.4-1.5, ELS MW28_0.4-0.5, AHEQ MW09_0.4-0.5	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELN MW10_0.4-0.5, ELN MW10_0.9-1.0, ELN MW10_1.9-2.0, ELN MW10-2.9·3 0, AP MW02_0.4-0.5, AP MW02_1.4-1.5, AP MW01_0.9-1.0	**16-Nov-2018**	**29-Nov-2018**	15-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AP MW01_9.1-9.2	**17-Nov-2018**	**29-Nov-2018**	16-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW09_12.1-12.2	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓

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) AHEQ MW08_0.4-0.5, AHEQ MW08_1.4-1.5, AHEQ MW07_0.4-0.5, AHEQ MW10_0.9-1.0, AHEQ MW10_2.9-3.0, AHEQ MW11_0.9-1.0	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW11_2.9-3.0	**13-Nov-2018**	**29-Nov-2018**	12-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) EWHEQ MW06_0.4-0.5, EWHEQ MW06_1.4-1.5, EWHEQ MW07_0.9-1.0, EWHEQ MW07_1.4-1.5, ELS MW28_10.4-10.5, AHEQ MW07_7.2-7.3	**14-Nov-2018**	**29-Nov-2018**	13-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELS MW29_0.4-0.5, ELS MW29_1.4-1.5, ELN MW09_0.4-0.5, ELN MW09_1.4-1.5, ELS MW28_0.4-0.5, AHEQ MW09_0.4-0.5	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELN MW10_0.4-0.5, ELN MW10_0.9-1.0, ELN MW10_1.9-2.0, ELN MW10-2.9·3 0, AP MW02_0.4-0.5, AP MW02_1.4-1.5, AP MW01_0.9-1.0	**16-Nov-2018**	**29-Nov-2018**	15-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AP MW01_9.1-9.2	**17-Nov-2018**	**29-Nov-2018**	16-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW09_12.1-12.2	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓

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) AHEQ MW08_0.4-0.5, AHEQ MW08_1.4-1.5, AHEQ MW07_0.4-0.5, AHEQ MW10_0.9-1.0, AHEQ MW10_2.9-3.0, AHEQ MW11_0.9-1.0	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW11_2.9-3.0	**13-Nov-2018**	**29-Nov-2018**	12-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) EWHEQ MW06_0.4-0.5, EWHEQ MW06_1.4-1.5, EWHEQ MW07_0.9-1.0, EWHEQ MW07_1.4-1.5, ELS MW28_10.4-10.5, AHEQ MW07_7.2-7.3	**14-Nov-2018**	**29-Nov-2018**	13-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELS MW29_0.4-0.5, ELS MW29_1.4-1.5, ELN MW09_0.4-0.5, ELN MW09_1.4-1.5, ELS MW28_0.4-0.5, AHEQ MW09_0.4-0.5	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) ELN MW10_0.4-0.5, ELN MW10_0.9-1.0, ELN MW10_1.9-2.0, ELN MW10-2.9·3 0, AP MW02_0.4-0.5, AP MW02_1.4-1.5, AP MW01_0.9-1.0	**16-Nov-2018**	**29-Nov-2018**	15-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AP MW01_9.1-9.2	**17-Nov-2018**	**29-Nov-2018**	16-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X) AHEQ MW09_12.1-12.2	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓

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)							
AHEQ MW08_0.4-0.5, AHEQ MW08_1.4-1.5, AHEQ MW07_0.4-0.5, AHEQ MW10_0.9-1.0, AHEQ MW10_2.9-3.0, AHEQ MW11_0.9-1.0	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X)							
AHEQ MW11_2.9-3.0	**13-Nov-2018**	**29-Nov-2018**	12-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X)							
EWHEQ MW06_0.4-0.5, EWHEQ MW06_1.4-1.5, EWHEQ MW07_0.9-1.0, EWHEQ MW07_1.4-1.5, ELS MW28_10.4-10.5, AHEQ MW07_7.2-7.3	**14-Nov-2018**	**29-Nov-2018**	13-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X)							
ELS MW29_0.4-0.5, ELS MW29_1.4-1.5, ELN MW09_0.4-0.5, ELN MW09_1.4-1.5, ELS MW28_0.4-0.5, AHEQ MW09_0.4-0.5	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X)							
ELN MW10_0.4-0.5, ELN MW10_0.9-1.0, ELN MW10_1.9-2.0, ELN MW10-2.9·3 0, AP MW02_0.4-0.5, AP MW02_1.4-1.5, AP MW01_0.9-1.0	**16-Nov-2018**	**29-Nov-2018**	15-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X)							
AP MW01_9.1-9.2	**17-Nov-2018**	**29-Nov-2018**	16-May-2019	✓	**29-Nov-2018**	08-Jan-2019	✓
HDPE Soil Jar (EP231X)							
AHEQ MW09_12.1-12.2	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	08-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: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	29	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	29	**6.90**	**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. 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
Sample Extraction for PFAS	EP231-PR	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1835147**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: james.peachey@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Facsimile	: +61 07 3553 2050	Facsimile	: +61-2-8784 8500
Project	: 60588844	Page	: 1 of 6
Order number	: 60588844	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: CORINA JAKOHI, LUKE McLVER		

Dates

Date Samples Received	: 22-Nov-2018 13:00	Issue Date	: 26-Nov-2018
Client Requested Due Date	: 03-Dec-2018	Scheduled Reporting Date	: **03-Dec-2018**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 6	Temperature	: 26
Receipt Detail	:	No. of samples received / analysed	: 119 / 70

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order has split into ES1835146 due to number of samples.**
- **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.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample QC106, QC107, QC108, QC109, QC110, QC204 and QC205 to be forwarded to NMI as per COC's.**
- 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: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1835147-001	18-Nov-2018 00:00	AFD MW37_0.9-1.0		☐	☐
ES1835147-002	18-Nov-2018 00:00	AFD MW37_1.4-1.5	☐		
ES1835147-003	18-Nov-2018 00:00	AFD MW37_1.9-2.0	☐		
ES1835147-004	18-Nov-2018 00:00	AFD MW37_2.9-3.0		☐	☐
ES1835147-005	18-Nov-2018 00:00	AFD MW37_5.9-6.0	☐		
ES1835147-006	18-Nov-2018 00:00	AFD MW37_8.9-9.0	☐		
ES1835147-007	18-Nov-2018 00:00	AFD MW37_11.5-11.7	☐		
ES1835147-008	18-Nov-2018 00:00	LPI MW31_0.4-0.5		☐	☐
ES1835147-009	16-Nov-2018 00:00	LPI MW31_0.9-1.0	☐		
ES1835147-010	16-Nov-2018 00:00	LPI MW31_1.4-1.5	☐		
ES1835147-011	16-Nov-2018 00:00	LPI MW31_1.9-2.0	☐		
ES1835147-012	16-Nov-2018 00:00	LPI MW31_2.9-3.0		☐	☐
ES1835147-013	16-Nov-2018 00:00	LPI MW31_5.9-6.0	☐		
ES1835147-014	16-Nov-2018 00:00	LPI MW31_6.4-6.5	☐		
ES1835147-015	16-Nov-2018 00:00	LPI MW31_8.9-9.0	☐		
ES1835147-016	14-Nov-2018 00:00	RW SS01_0.1		☐	☐
ES1835147-017	14-Nov-2018 00:00	RW SS01_0.2	☐		
ES1835147-018	14-Nov-2018 00:00	RW SS02_0.1	☐		
ES1835147-019	14-Nov-2018 00:00	RW SS02_0.2		☐	☐
ES1835147-020	14-Nov-2018 00:00	RW SS03_0.1		☐	☐
ES1835147-021	14-Nov-2018 00:00	RW SS03_0.2	☐		
ES1835147-022	20-Nov-2018 00:00	RW SS04_0.1	☐		
ES1835147-023	20-Nov-2018 00:00	RW SS04_0.2		☐	☐
ES1835147-024	16-Nov-2018 00:00	LP SS01_0.1		☐	☐
ES1835147-025	16-Nov-2018 00:00	LP SS01_0.2	☐		
ES1835147-026	16-Nov-2018 00:00	LP SS02_0.1	☐		
ES1835147-027	16-Nov-2018 00:00	LP SS02_0.3		☐	☐
ES1835147-028	16-Nov-2018 00:00	LP SS03_0.1		☐	☐
ES1835147-029	16-Nov-2018 00:00	LP SS03_0.2	☐		
ES1835147-030	17-Nov-2018 00:00	LP SS04_0.1		☐	☐
ES1835147-031	17-Nov-2018 00:00	LP SS04_0.2	☐		
ES1835147-032	17-Nov-2018 00:00	LP SS05_0.1	☐		
ES1835147-033	17-Nov-2018 00:00	LP SS05_0.2		☐	☐
ES1835147-034	17-Nov-2018 00:00	LP SS06_0.1		☐	☐
ES1835147-035	17-Nov-2018 00:00	LP SS06_0.2	☐		

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1835147-036	17-Nov-2018 00:00	LP SS07_0.1	☐		
ES1835147-037	17-Nov-2018 00:00	LP SS07_0.2		☐	☐
ES1835147-038	17-Nov-2018 00:00	LP SS08_0.1	☐		
ES1835147-039	17-Nov-2018 00:00	LP SS08_0.2		☐	☐
ES1835147-040	19-Nov-2018 00:00	EWHEQ SS01_0.1		☐	☐
ES1835147-041	19-Nov-2018 00:00	EWHEQ SS01_0.2	☐		
ES1835147-042	19-Nov-2018 00:00	EWHEQ SS02_0.1		☐	☐
ES1835147-043	19-Nov-2018 00:00	EWHEQ SS03_0.1		☐	☐
ES1835147-044	19-Nov-2018 00:00	EWHEQ SS03_0.2	☐		
ES1835147-045	19-Nov-2018 00:00	EWHEQ SS04_0.1	☐		
ES1835147-046	19-Nov-2018 00:00	EWHEQ SS04_0.2		☐	☐
ES1835147-047	19-Nov-2018 00:00	EWHEQ SS05_0.1		☐	☐
ES1835147-048	19-Nov-2018 00:00	EWHEQ SS05_0.2	☐		
ES1835147-049	19-Nov-2018 00:00	EWHEQ SS06_0.1		☐	☐
ES1835147-050	19-Nov-2018 00:00	EWHEQ SS06_0.2	☐		
ES1835147-051	19-Nov-2018 00:00	EWHEQ SS07_0.1	☐		
ES1835147-052	19-Nov-2018 00:00	EWHEQ SS07_0.2		☐	☐
ES1835147-053	19-Nov-2018 00:00	EWHEQ SS08_0.1	☐		
ES1835147-054	16-Nov-2018 00:00	EWHEQ SS08_0.2		☐	☐
ES1835147-069	17-Nov-2018 00:00	ELS_SS04_0.2		☐	☐
ES1835147-070	16-Nov-2018 00:00	ELS_SS03_0.1		☐	☐
ES1835147-071	17-Nov-2018 00:00	ELS_SS02_0.1	☐		
ES1835147-072	17-Nov-2018 00:00	ELS_SS02_0.2		☐	☐
ES1835147-073	17-Nov-2018 00:00	ELS_SS01_0.1		☐	☐
ES1835147-074	14-Nov-2018 00:00	AHEQ_SS07_0.1	☐		
ES1835147-075	14-Nov-2018 00:00	AHEQ_SS07_0.2		☐	☐
ES1835147-076	14-Nov-2018 00:00	AHEQ_SS06_0.1		☐	☐
ES1835147-077	14-Nov-2018 00:00	AHEQ_SS06_0.2	☐		
ES1835147-078	14-Nov-2018 00:00	AHEQ_SS05_0.1		☐	☐
ES1835147-079	14-Nov-2018 00:00	AHEQ_SS05_0.2	☐		
ES1835147-080	14-Nov-2018 00:00	AHEQ_SS04_0.1		☐	☐
ES1835147-081	17-Nov-2018 00:00	AP_SS02_0.1		☐	☐
ES1835147-082	17-Nov-2018 00:00	AP_SS02_0.2	☐		
ES1835147-083	16-Nov-2018 00:00	AP_SS01_0.1	☐		
ES1835147-084	16-Nov-2018 00:00	AP_SS02_0.2		☐	☐
ES1835147-085	16-Nov-2018 00:00	ELN_SS03_0.1		☐	☐
ES1835147-086	16-Nov-2018 00:00	ELN_SS03_0.2	☐		
ES1835147-087	16-Nov-2018 00:00	ELN_SS02_0.1		☐	☐
ES1835147-088	16-Nov-2018 00:00	ELN_SS01_0.1	☐		
ES1835147-089	17-Nov-2018 00:00	ELN_SS01_0.2		☐	☐
ES1835147-090	17-Nov-2018 00:00	ELS_SS05_0.1	☐		

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES1835147-091	17-Nov-2018 00:00	ELS_SS05_0.2		☐	☐
ES1835147-092	17-Nov-2018 00:00	ELS_SS04_0.1		☐	☐
ES1835147-093	16-Nov-2018 00:00	AP_SS08_0.1		☐	☐
ES1835147-094	16-Nov-2018 00:00	AP_SS08_0.2	☐		
ES1835147-095	16-Nov-2018 00:00	AP_SS05_0.1	☐		
ES1835147-096	16-Nov-2018 00:00	AP_SS05_0.2		☐	☐
ES1835147-097	17-Nov-2018 00:00	AP_SS07_0.1		☐	☐
ES1835147-098	17-Nov-2018 00:00	AP_SS07_0.2	☐		
ES1835147-099	17-Nov-2018 00:00	AP_SS06_0.1	☐		
ES1835147-100	17-Nov-2018 00:00	AP_SS06_0.2		☐	☐
ES1835147-101	17-Nov-2018 00:00	AP_SS04_0.1		☐	☐
ES1835147-102	17-Nov-2018 00:00	AP_SS04_0.2	☐		
ES1835147-103	17-Nov-2018 00:00	AP_SS03_0.1		☐	☐
ES1835147-104	17-Nov-2018 00:00	AP_SS03_0.2	☐		
ES1835147-105	16-Nov-2018 00:00	QC106_20181116		☐	☐
ES1835147-106	16-Nov-2018 00:00	QC107_181116	☐		
ES1835147-107	17-Nov-2018 00:00	QC108_181117		☐	☐
ES1835147-108	17-Nov-2018 00:00	QC109_181117		☐	☐
ES1835147-109	18-Nov-2018 00:00	QC110_181118		☐	☐
ES1835147-110	14-Nov-2018 00:00	AHEQ_SS04_0.2		☐	☐
ES1835147-111	14-Nov-2018 00:00	AHEQ_SS03_0.1		☐	☐
ES1835147-112	14-Nov-2018 00:00	AHEQ_SS03_0.2	☐		
ES1835147-113	14-Nov-2018 00:00	AHEQ_SS02_0.1		☐	☐
ES1835147-114	14-Nov-2018 00:00	AHEQ_SS02_0.2	☐		
ES1835147-115	14-Nov-2018 00:00	AHEQ_SS01_0.1		☐	☐
ES1835147-116	17-Nov-2018 00:00	AHEQ_SS01_0.2	☐		
ES1835147-117	12-Nov-2018 00:00	QC104_181112		☐	☐
ES1835147-118	16-Nov-2018 00:00	ELS_SS03_0.2		☐	☐
ES1835147-119	15-Nov-2018 00:00	QC105_20181115		☐	☐

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
ES1835147-055	18-Nov-2018 00:00	RWW_MW01_20181118	☐
ES1835147-056	18-Nov-2018 00:00	RWW_MW02_20181118	☐
ES1835147-057	18-Nov-2018 00:00	RWW_MW03_20181118	☐
ES1835147-058	18-Nov-2018 00:00	RWW_MW04_20181118	☐
ES1835147-059	18-Nov-2018 00:00	RWW_MW05_20181118	☐
ES1835147-060	19-Nov-2018 00:00	RWW_MW06_20181118	☐
ES1835147-061	18-Nov-2018 00:00	RWW_MW07_20181118	☐
ES1835147-062	18-Nov-2018 00:00	RWW_MW08_20181118	☐
ES1835147-063	11-Nov-2018 00:00	QC307_181111	☐
ES1835147-064	12-Nov-2018 00:00	QC308_181112	☐
ES1835147-065	15-Nov-2018 00:00	QC309_181115	☐
ES1835147-066	18-Nov-2018 00:00	QC310_181118	☐
ES1835147-067	19-Nov-2018 00:00	QC311_181119 GM	☐
ES1835147-068	19-Nov-2018 00:00	QC311_181119 LM	☐

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

CORINA JAKOHI

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

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1835147**	Page	: 1 of 33
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 22-Nov-2018 13:00
Order number	: 60588844	Date Analysis Commenced	: 28-Nov-2018
C-O-C number	: ----	Issue Date	: 03-Dec-2018 17:57
Sampler	: CORINA JAKOHI, LUKE McLVER		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 119		
No. of samples analysed	: 70		

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.

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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.

- EP231X-ST: Positive 6-2-FTS result in sample#68 confirmed by re-extraction and re-analysis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AFD MW37_0.9-1.0	AFD MW37_2.9-3.0	LPI MW31_0.4-0.5	LPI MW31_2.9-3.0	RW SS01_0.1
				18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	16-Nov-2018 00:00	14-Nov-2018 00:00
				ES1835147-001	ES1835147-004	ES1835147-008	ES1835147-012	ES1835147-016
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**11.7**	**12.0**	**15.6**	**4.5**	**12.2**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
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)				AFD MW37_0.9-1.0	AFD MW37_2.9-3.0	LPI MW31_0.4-0.5	LPI MW31_2.9-3.0	RW SS01_0.1
				18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	16-Nov-2018 00:00	14-Nov-2018 00:00
				ES1835147-001	ES1835147-004	ES1835147-008	ES1835147-012	ES1835147-016
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**82.5**	**72.0**	**64.5**	**69.0**	**86.0**
13C8-PFOA	----	0.0002	%	**71.0**	**68.0**	**82.5**	**69.5**	**84.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				RW SS02_0.2	RW SS03_0.1	RW SS04_0.2	LP SS01_0.1	LP SS02_0.3
				14-Nov-2018 00:00	14-Nov-2018 00:00	20-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-019	ES1835147-020	ES1835147-023	ES1835147-024	ES1835147-027
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**14.2**	**8.4**	**2.6**	**4.6**	**6.3**
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	**0.0012**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0005**	<0.0002	**0.0007**	**0.0061**	**0.0369**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0012**
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	**0.0010**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0005**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0006**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<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	**0.0007**
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)				RW SS02_0.2	RW SS03_0.1	RW SS04_0.2	LP SS01_0.1	LP SS02_0.3
				14-Nov-2018 00:00	14-Nov-2018 00:00	20-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-019	ES1835147-020	ES1835147-023	ES1835147-024	ES1835147-027
				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	**0.0007**	<0.0002	**0.0007**	**0.0061**	**0.0423**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0007**	<0.0002	**0.0007**	**0.0061**	**0.0381**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0007**	<0.0002	**0.0007**	**0.0061**	**0.0393**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**72.0**	**63.0**	**89.5**	**84.0**	**86.0**
13C8-PFOA	----	0.0002	%	**68.0**	**62.0**	**87.0**	**82.5**	**79.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				LP SS03_0.1	LP SS04_0.1	LP SS05_0.2	LP SS06_0.1	LP SS07_0.2
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00
				ES1835147-028	ES1835147-030	ES1835147-033	ES1835147-034	ES1835147-037
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**8.6**	**5.2**	**10.0**	**9.2**	**10.5**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	**0.0003**	<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	**0.0003**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0030**	**0.0004**	**0.0027**	**0.0014**	**0.0069**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	**0.0003**	<0.0002	**0.0003**	<0.0002	**0.0014**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0500**	**0.0239**	**0.0594**	**0.0172**	**0.260**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	**0.0009**	<0.0002	**0.0061**	**0.0002**	**0.0099**
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	**0.0005**	<0.0002	**0.0003**	<0.0002	**0.0010**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0006**	<0.0002	**0.0007**	<0.0002	**0.0013**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0006**	<0.0002	<0.0002	<0.0002	**0.0016**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0012**	**0.0003**	**0.0007**	**0.0004**	**0.0043**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	**0.0004**	<0.0002	<0.0002	<0.0002	**0.0006**
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	**0.0005**	<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	**0.0004**	<0.0002	**0.0021**
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)				LP SS03_0.1	LP SS04_0.1	LP SS05_0.2	LP SS06_0.1	LP SS07_0.2
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00
				ES1835147-028	ES1835147-030	ES1835147-033	ES1835147-034	ES1835147-037
				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	**0.0580**	**0.0246**	**0.0713**	**0.0192**	**0.289**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0530**	**0.0243**	**0.0621**	**0.0186**	**0.267**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0562**	**0.0246**	**0.0638**	**0.0190**	**0.275**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**61.0**	**90.0**	**85.5**	**83.5**	**75.0**
13C8-PFOA	----	0.0002	%	**78.5**	**82.5**	**87.0**	**85.5**	**74.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				LP SS08_0.2	EWHEQ SS01_0.1	EWHEQ SS02_0.1	EWHEQ SS03_0.1	EWHEQ SS04_0.2
				17-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00
				ES1835147-039	ES1835147-040	ES1835147-042	ES1835147-043	ES1835147-046
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**10.0**	**5.0**	**6.5**	**6.2**	**5.0**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	**0.0083**	**0.0227**	**0.0073**	**0.0022**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	**0.0023**	**0.0106**	**0.0047**	**0.0009**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0006**	**0.0120**	**0.0213**	**0.0238**	**0.0064**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	**0.0028**	**0.0049**	**0.0017**	**0.0004**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0037**	**0.107**	**0.449**	**0.0333**	**0.0089**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	**0.0035**	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	**0.003**	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0004**	**0.0049**	**0.0068**	**0.0063**	**0.0023**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0003**	**0.0089**	**0.0546**	**0.0138**	**0.0021**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	**0.0008**	**0.0020**	**0.0019**	**0.0002**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0003**	**0.0030**	**0.0047**	**0.0034**	**0.0006**
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	**0.0004**	<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)				LP SS08_0.2	EWHEQ SS01_0.1	EWHEQ SS02_0.1	EWHEQ SS03_0.1	EWHEQ SS04_0.2
				17-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00
				ES1835147-039	ES1835147-040	ES1835147-042	ES1835147-043	ES1835147-046
				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	<0.0005	**0.0129**	**0.0364**	**0.0401**	**0.0025**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	**0.0016**	**0.0039**	**0.0009**	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	**0.0014**	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0053**	**0.168**	**0.622**	**0.137**	**0.0265**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0043**	**0.119**	**0.470**	**0.0571**	**0.0153**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0053**	**0.162**	**0.601**	**0.131**	**0.0252**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**80.5**	**75.5**	**73.0**	**76.5**	**70.5**
13C8-PFOA	----	0.0002	%	**82.0**	**66.5**	**71.0**	**68.5**	**67.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EWHEQ SS05_0.1	EWHEQ SS06_0.1	EWHEQ SS07_0.2	EWHEQ SS08_0.2	ELS_SS04_0.2
				19-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	16-Nov-2018 00:00	17-Nov-2018 00:00
				ES1835147-047	ES1835147-049	ES1835147-052	ES1835147-054	ES1835147-069
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**5.0**	**4.5**	**7.0**	**5.9**	**8.6**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0005**	**0.0005**	**0.0005**	**0.0136**	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0020**	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0158**	**0.0010**	**0.0060**	**0.0633**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0003**	**0.0004**	**0.0038**	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0004**	**0.0002**	**0.0016**	<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**	**0.0022**	<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)				EWHEQ SS05_0.1	EWHEQ SS06_0.1	EWHEQ SS07_0.2	EWHEQ SS08_0.2	ELS_SS04_0.2
				19-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	16-Nov-2018 00:00	17-Nov-2018 00:00
				ES1835147-047	ES1835147-049	ES1835147-052	ES1835147-054	ES1835147-069
				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	**0.0081**	**0.0041**	**0.0102**	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	**0.0015**	<0.0005	**0.0032**	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	**0.0009**	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0266**	**0.0062**	**0.0266**	**0.0811**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0163**	**0.0015**	**0.0065**	**0.0769**	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0266**	**0.0062**	**0.0257**	**0.0791**	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**77.5**	**80.0**	**80.5**	**82.0**	**81.5**
13C8-PFOA	----	0.0002	%	**75.0**	**76.5**	**77.0**	**79.5**	**74.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				ELS_SS03_0.1	ELS_SS02_0.2	ELS_SS01_0.1	AHEQ_SS07_0.2	AHEQ_SS06_0.1
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00
				ES1835147-070	ES1835147-072	ES1835147-073	ES1835147-075	ES1835147-076
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**2.7**	**7.8**	**5.4**	**7.6**	**7.5**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0002**	**0.0239**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0002**	**0.0082**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0007**	<0.0002	<0.0002	**0.0060**	**0.0890**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0015**	**0.0046**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0018**	**0.0002**	**0.0003**	**0.0470**	**0.0694**
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	**0.0010**	**0.0141**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0015**	**0.0231**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0005**	**0.0023**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0022**	**0.0074**
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)				ELS_SS03_0.1	ELS_SS02_0.2	ELS_SS01_0.1	AHEQ_SS07_0.2	AHEQ_SS06_0.1
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00
				ES1835147-070	ES1835147-072	ES1835147-073	ES1835147-075	ES1835147-076
				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	**0.0101**	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	**0.0009**	<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	**0.0025**	**0.0002**	**0.0003**	**0.0723**	**0.242**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0025**	**0.0002**	**0.0003**	**0.0530**	**0.158**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0025**	**0.0002**	**0.0003**	**0.0704**	**0.229**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**81.5**	**74.5**	**81.0**	**74.5**	**71.0**
13C8-PFOA	----	0.0002	%	**84.5**	**74.5**	**84.0**	**70.5**	**65.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AHEQ_SS05_0.1	AHEQ_SS04_0.1	AP_SS02_0.1	AP_SS02_0.2	ELN_SS03_0.1
				14-Nov-2018 00:00	14-Nov-2018 00:00	17-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-078	ES1835147-080	ES1835147-081	ES1835147-084	ES1835147-085
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**7.8**	**4.8**	**4.6**	**7.8**	**11.8**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	**0.0003**	**0.0186**	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	**0.0006**	**0.0240**	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0332**	**0.519**	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	**0.0023**	**0.0332**	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0064**	**0.618**	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	**0.0005**	<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	**0.0005**	**0.0039**	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0014**	**0.0226**	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0006**	**0.0022**	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0066**	**0.0160**	<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)				AHEQ_SS05_0.1	AHEQ_SS04_0.1	AP_SS02_0.1	AP_SS02_0.2	ELN_SS03_0.1
				14-Nov-2018 00:00	14-Nov-2018 00:00	17-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-078	ES1835147-080	ES1835147-081	ES1835147-084	ES1835147-085
				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	**0.0137**	<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	**0.0656**	**1.26**	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0396**	**1.14**	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0627**	**1.20**	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**77.0**	**75.5**	**81.5**	**103**	**74.5**
13C8-PFOA	----	0.0002	%	**72.0**	**71.5**	**80.5**	**77.0**	**75.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				ELN_SS02_0.1	ELN_SS01_0.2	ELS_SS05_0.2	ELS_SS04_0.1	AP_SS08_0.1
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-087	ES1835147-089	ES1835147-091	ES1835147-092	ES1835147-093
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**6.3**	**14.4**	**11.3**	**7.8**	**2.8**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0004**	**0.0003**	**0.0003**	<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)				ELN_SS02_0.1	ELN_SS01_0.2	ELS_SS05_0.2	ELS_SS04_0.1	AP_SS08_0.1
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-087	ES1835147-089	ES1835147-091	ES1835147-092	ES1835147-093
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0004**	**0.0003**	**0.0003**	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0004**	**0.0003**	**0.0003**	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0004**	**0.0003**	**0.0003**	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**72.0**	**79.5**	**81.0**	**62.0**	**84.0**
13C8-PFOA	----	0.0002	%	**80.5**	**79.0**	**76.0**	**70.0**	**77.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AP_SS05_0.2	AP_SS07_0.1	AP_SS06_0.2	AP_SS04_0.1	AP_SS03_0.1
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00
				ES1835147-096	ES1835147-097	ES1835147-100	ES1835147-101	ES1835147-103
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**9.1**	**5.1**	**6.1**	**4.2**	**3.8**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
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)				AP_SS05_0.2	AP_SS07_0.1	AP_SS06_0.2	AP_SS04_0.1	AP_SS03_0.1
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00
				ES1835147-096	ES1835147-097	ES1835147-100	ES1835147-101	ES1835147-103
				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	%	**81.5**	**93.0**	**76.5**	**79.5**	**73.5**
13C8-PFOA	----	0.0002	%	**72.0**	**88.0**	**71.0**	**80.0**	**84.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				QC106_20181116	QC108_181117	QC109_181117	QC110_181118	AHEQ_SS04_0.2
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	18-Nov-2018 00:00	14-Nov-2018 00:00
				ES1835147-105	ES1835147-107	ES1835147-108	ES1835147-109	ES1835147-110
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**6.5**	**24.8**	**4.0**	**33.6**	**8.3**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0124**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0169**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.366**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0157**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	<0.0002	**0.135**
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	**0.0030**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0205**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0016**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	**0.0114**
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)				QC106_20181116	QC108_181117	QC109_181117	QC110_181118	AHEQ_SS04_0.2
				16-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	18-Nov-2018 00:00	14-Nov-2018 00:00
				ES1835147-105	ES1835147-107	ES1835147-108	ES1835147-109	ES1835147-110
				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	**0.582**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	<0.0002	**0.501**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	<0.0002	**0.550**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**76.5**	**66.5**	**81.0**	**80.0**	**72.5**
13C8-PFOA	----	0.0002	%	**72.0**	**73.0**	**83.0**	**81.5**	**84.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AHEQ_SS03_0.1	AHEQ_SS02_0.1	AHEQ_SS01_0.1	QC104_181112	ELS_SS03_0.2
				14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	12-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-111	ES1835147-113	ES1835147-115	ES1835147-117	ES1835147-118
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**9.0**	**7.3**	**7.1**	**17.8**	**5.4**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	**0.0024**	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	**0.0038**	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	**0.0012**	**0.140**	<0.0002	**0.0002**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	**0.0003**	**0.0026**	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0012**	**0.0173**	**0.0071**	<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	**0.005**	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	**0.0004**	**0.0037**	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	**0.0003**	**0.0066**	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	**0.0003**	**0.0037**	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	**0.0004**	**0.0100**	<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)				AHEQ_SS03_0.1	AHEQ_SS02_0.1	AHEQ_SS01_0.1	QC104_181112	ELS_SS03_0.2
				14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	12-Nov-2018 00:00	16-Nov-2018 00:00
				ES1835147-111	ES1835147-113	ES1835147-115	ES1835147-117	ES1835147-118
				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	**0.0008**	<0.0005	**0.0154**	<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	**0.0020**	**0.0202**	**0.200**	<0.0002	**0.0004**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0012**	**0.0185**	**0.147**	<0.0002	**0.0004**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0020**	**0.0199**	**0.194**	<0.0002	**0.0004**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**66.0**	**75.0**	**71.0**	**84.5**	**96.5**
13C8-PFOA	----	0.0002	%	**67.0**	**75.0**	**75.0**	**79.0**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				QC105_20181115	----	----	----	----
				15-Nov-2018 00:00	----	----	----	----
				ES1835147-119	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**12.5**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				QC105_20181115	----	----	----	----
				15-Nov-2018 00:00	----	----	----	----
				ES1835147-119	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**65.5**	----	----	----	----
13C8-PFOA	----	0.0002	%	**69.5**	----	----	----	----

Analytical Results

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

				RWW_MW01_20181118	RWW_MW02_20181118	RWW_MW03_20181118	RWW_MW04_20181118	RWW_MW05_20181118
				18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00
				ES1835147-055	ES1835147-056	ES1835147-057	ES1835147-058	ES1835147-059
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0016**	**0.0010**	**0.0028**	**0.0016**	**0.0057**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	**0.0007**	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0040**	**0.0018**	**0.0044**	**0.0017**	**0.0030**
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	**0.0100**	**0.0023**	**0.0040**	**0.0018**	**0.0030**
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	**0.013**	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0589**	**0.0014**	<0.0005	**0.0011**	**0.0013**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0460**	**0.0012**	<0.0005	**0.0009**	**0.0008**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0221**	**0.0011**	<0.0005	**0.0005**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0026**	**0.0011**	<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)				RWW_MW01_20181118	RWW_MW02_20181118	RWW_MW03_20181118	RWW_MW04_20181118	RWW_MW05_20181118
				18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00
				ES1835147-055	ES1835147-056	ES1835147-057	ES1835147-058	ES1835147-059
				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	**0.038**	**0.098**	**0.140**	**0.149**	**0.115**
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	**0.196**	**0.108**	**0.152**	**0.157**	**0.129**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0140**	**0.0041**	**0.0084**	**0.0035**	**0.0060**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.196**	**0.108**	**0.151**	**0.157**	**0.129**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**112**	**114**	**115**	**111**	**109**
13C8-PFOA	----	0.0005	%	**113**	**112**	**113**	**109**	**113**

Analytical Results

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

				RWW_MW06_20181118	RWW_MW07_20181118	RWW_MW08_20181118	QC307_181111	QC308_181112
				19-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	11-Nov-2018 00:00	12-Nov-2018 00:00
				ES1835147-060	ES1835147-061	ES1835147-062	ES1835147-063	ES1835147-064
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0135**	**0.0651**	**0.0517**	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	**0.0054**	**0.0006**	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0024**	**0.0490**	**0.0041**	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	**0.0026**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0016**	**0.176**	**0.0022**	<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	**0.010**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	**0.0509**	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	**0.0393**	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	**0.0188**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	**0.0074**	<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)				RWW_MW06_20181118	RWW_MW07_20181118	RWW_MW08_20181118	QC307_181111	QC308_181112
				19-Nov-2018 00:00	18-Nov-2018 00:00	18-Nov-2018 00:00	11-Nov-2018 00:00	12-Nov-2018 00:00
				ES1835147-060	ES1835147-061	ES1835147-062	ES1835147-063	ES1835147-064
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	**0.075**	**0.240**	**0.193**	<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	**0.0925**	**0.665**	**0.252**	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0040**	**0.225**	**0.0063**	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0925**	**0.656**	**0.251**	<0.0003	<0.0003
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**110**	**107**	**103**	**99.5**	**98.5**
13C8-PFOA	----	0.0005	%	**105**	**101**	**105**	**108**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC309_181115	QC310_181118	QC311_181119 GM	QC311_181119 LM	----
				15-Nov-2018 00:00	18-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	----
				ES1835147-065	ES1835147-066	ES1835147-067	ES1835147-068	--------
				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	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<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	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<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	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<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	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<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	----
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)				QC309_181115	QC310_181118	QC311_181119 GM	QC311_181119 LM	----
				15-Nov-2018 00:00	18-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00	----
				ES1835147-065	ES1835147-066	ES1835147-067	ES1835147-068	--------
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	**0.003**	----
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	<0.0003	<0.0003	<0.0003	**0.0030**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	<0.0003	<0.0003	<0.0003	<0.0003	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0003	<0.0003	<0.0003	**0.0030**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**99.6**	**104**	**106**	**110**	----
13C8-PFOA	----	0.0005	%	**108**	**107**	**116**	**106**	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
□□ □□□□□	□□ □□ □□	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
□□ □□□□□	□□ □□ □□	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1835147**	Page	: 1 of 20
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 22-Nov-2018
Order number	: 60588844	Date Analysis Commenced	: 28-Nov-2018
C-O-C number	: ----	Issue Date	: 03-Dec-2018
Sampler	: CORINA JAKOHI, LUKE McLVER		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 119		
No. of samples analysed	: 70		

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

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.

Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
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: **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: 2064810)									
EM1818839-101	Anonymous	EA055: Moisture Content	----	0.1	%	13.5	12.5	7.40	0% - 20%
ES1835147-016	RW SS01_0.1	EA055: Moisture Content	----	0.1	%	12.2	12.4	2.12	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2064811)									
ES1835147-034	LP SS06_0.1	EA055: Moisture Content	----	0.1	%	9.2	9.0	1.76	0% - 20%
ES1835147-069	ELS_SS04_0.2	EA055: Moisture Content	----	0.1	%	8.6	8.0	7.24	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2064812)									
ES1835147-084	AP_SS02_0.2	EA055: Moisture Content	----	0.1	%	7.8	7.8	0.00	0% - 20%
ES1835147-103	AP_SS03_0.1	EA055: Moisture Content	----	0.1	%	3.8	3.6	7.84	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2064813)									
ES1835147-117	QC104_181112	EA055: Moisture Content	----	0.1	%	17.8	16.2	9.56	0% - 20%
ES1835215-008	Anonymous	EA055: Moisture Content	----	0.1	%	11.1	11.2	1.31	0% - 50%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2058511)									
ES1835147-001	AFD MW37_0.9-1.0	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
ES1835147-028	LP SS03_0.1	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0003	0.0003	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	0.0030	0.0031	6.10	0% - 50%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0003	0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0500	0.0501	0.218	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0009	0.0007	29.9	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: 2058517)									
ES1835147-047	EWHEQ SS05_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	0.0005	0.0004	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0158	0.0147	7.52	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
ES1835147-078	AHEQ_SS05_0.1	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0003	0.0004	27.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0006	0.0008	26.7	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0332	0.0356	6.78	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0023	0.0026	13.2	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0064	0.0075	15.0	0% - 20%
		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: 2058544)									
ES1835147-096	AP_SS05_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
ES1835147-111	AHEQ_SS03_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
		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	0.0012	0.0012	0.00	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: 2058511)									
ES1835147-001	AFD MW37_0.9-1.0	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
ES1835147-028	LP SS03_0.1	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0005	0.0004	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0006	0.0005	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0006	0.0005	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: 2058511) - continued									
ES1835147-028	LP SS03_0.1	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0012	0.0011	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0004	0.0003	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: 2058517)									
ES1835147-047	EWHEQ SS05_0.1	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0003	0.0003	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0004	0.0004	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
ES1835147-078	AHEQ_SS05_0.1	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0005	0.0005	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0014	0.0016	15.8	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0006	0.0008	30.7	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0066	0.0076	14.3	0% - 20%
		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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2058544)									
ES1835147-096	AP_SS05_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

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: 2058544) - continued									
ES1835147-096	AP_SS05_0.2	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
ES1835147-111	AHEQ_SS03_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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2058511)									
ES1835147-001	AFD MW37_0.9-1.0	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
ES1835147-028	LP SS03_0.1	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

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: 2058517)									
ES1835147-047	EWHEQ SS05_0.1	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
ES1835147-078	AHEQ_SS05_0.1	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: 2058544)									
ES1835147-096	AP_SS05_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
ES1835147-111	AHEQ_SS03_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: 2058544) - continued									
ES1835147-111	AHEQ_SS03_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: 2058511)									
ES1835147-001	AFD MW37_0.9-1.0	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
ES1835147-028	LP SS03_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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2058517)									
ES1835147-047	EWHEQ SS05_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	0.0081	0.0080	1.70	0% - 50%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0015	0.0013	17.0	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
ES1835147-078	AHEQ_SS05_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

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: 2058517) - continued									
ES1835147-078	AHEQ_SS05_0.1	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0137	0.0158	14.1	0% - 20%
		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: 2058544)									
ES1835147-096	AP_SS05_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
ES1835147-111	AHEQ_SS03_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	0.0008	0.0007	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	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: 2064803)									
ES1835147-055	RWW_MW01_20181118	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0100	0.0099	1.61	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0016	0.0017	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	0.0040	0.0041	4.44	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
ES1835147-059	RWW_MW05_20181118	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0030	0.0033	10.2	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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2064803) - continued									
ES1835147-059	RWW_MW05_20181118	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0057	0.0059	2.75	0% - 50%
		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	0.0030	0.0029	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: 2064803)									
ES1835147-055	RWW_MW01_20181118	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0589	0.0588	0.238	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0460	0.0458	0.392	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0221	0.0225	1.52	0% - 20%
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0026	0.0026	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	0.013	0.012	0.00	No Limit
ES1835147-059	RWW_MW05_20181118	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0013	0.0013	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0008	0.0008	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: 2064803)									
ES1835147-055	RWW_MW01_20181118	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: 2064803) - continued									
ES1835147-055	RWW_MW01_20181118	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
ES1835147-059	RWW_MW05_20181118	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2064803)									
ES1835147-055	RWW_MW01_20181118	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	0.038	0.039	0.00	0% - 20%
		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
ES1835147-059	RWW_MW05_20181118	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	0.115	0.112	2.09	0% - 20%
		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

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: 2064803)									
ES1835147-055	RWW_MW01_20181118	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.196	0.196	0.102	0% - 20%
ES1835147-059	RWW_MW05_20181118	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.129	0.126	2.04	0% - 20%

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2058511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.0	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.2	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.2	54	125
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2058517)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.8	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.0	54	125
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2058544)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.4	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.6	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.4	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	57.8	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.2	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	68.8	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	68.0	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	72.0	59	129
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058517)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	64.1	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: 2058517) - continued								
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.4	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.0	59	129
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058544)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	65.4	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.4	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.8	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	77.4	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	84.0	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.4	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	77.7	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	55	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058517)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.8	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	80.9	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: 2058517) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.2	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	74.2	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.2	55	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058544)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.7	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.0	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	84.0	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	74.7	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.2	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058511)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	73.6	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	64.8	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	73.2	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	88.8	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058517)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	88.8	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	96.8	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	79.2	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058544)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	98.8	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	85.6	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.4	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.6	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	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2064803)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	98.8	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	99.4	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	90.6	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	56.6	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2064803)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	76.3	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	98.2	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	104	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	109	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	111	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	95.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	72.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	70.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	55.0	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	65.4	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2064803)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	76.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	57.5	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	57.7	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	64.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	62.9	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	56.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	65.6	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2064803)								
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	107	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	118	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	115	50	130
EP231P: PFAS Sums (QCLot: 2064803)								
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: **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: 2058511)							
ES1835147-001	AFD MW37_0.9-1.0	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	69.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	82.0	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	73.6	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	78.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	72.0	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2058517)							
ES1835147-047	EWHEQ SS05_0.1	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	67.6	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	80.0	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	64.8	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	70.0	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	69.6	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2058544)							
ES1835147-096	AP_SS05_0.2	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	87.2	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	80.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	87.2	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	66.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058511)							
ES1835147-001	AFD MW37_0.9-1.0	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	59.7	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	69.6	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	71.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	74.8	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	79.2	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	72.4	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	77.6	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	88.4	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	82.0	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	73.2	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	79.3	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058517)							

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: 2058517) - continued							
ES1835147-047	EWHEQ SS05_0.1	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	57.4	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	66.0	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	65.2	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	72.4	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	79.6	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	78.4	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	81.6	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	80.8	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	71.2	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	72.6	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2058544)							
ES1835147-096	AP_SS05_0.2	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	67.0	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	76.4	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	77.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	85.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	89.6	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	88.0	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	88.4	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	88.4	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	79.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	84.0	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	85.7	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058511)							
ES1835147-001	AFD MW37_0.9-1.0	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	75.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	85.4	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	79.6	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	69.2	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	71.8	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	75.6	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	73.6	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058517)							
ES1835147-047	EWHEQ SS05_0.1	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	76.4	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
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058517) - continued							
ES1835147-047	EWHEQ SS05_0.1	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	86.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	79.6	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	68.1	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	70.8	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	80.4	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	75.2	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2058544)							
ES1835147-096	AP_SS05_0.2	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	93.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	96.0	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	88.6	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	72.9	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	73.4	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	94.8	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	94.4	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058511)							
ES1835147-001	AFD MW37_0.9-1.0	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	74.8	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	73.2	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	74.8	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	86.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058517)							
ES1835147-047	EWHEQ SS05_0.1	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	89.6	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	# Not Determined	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	53.2	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	108	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058544)							
ES1835147-096	AP_SS05_0.2	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	120	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	115	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2058544) - continued							
ES1835147-096	AP_SS05_0.2	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	113	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	84.0	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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2064803)							
ES1835147-056	RWW_MW02_20181118	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	88.4	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	95.2	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	94.4	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	113	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	95.4	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	65.0	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2064803)							
ES1835147-056	RWW_MW02_20181118	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	56.1	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	90.8	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	90.6	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	101	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	104	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	95.4	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	79.6	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	69.4	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	71.4	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	51.2	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2064803)							
ES1835147-056	RWW_MW02_20181118	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	72.0	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	59.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	47.9	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	57.1	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	49.5	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	59.2	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	65.4	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*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2064803)							
ES1835147-056	RWW_MW02_20181118	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	114	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	# Not Determined	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	79.6	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	114	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1835147**	Page	: 1 of 13
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 22-Nov-2018
Site	: ----	Issue Date	: 03-Dec-2018
Sampler	: CORINA JAKOHI, LUKE McLVER	No. of samples received	: 119
Order number	: 60588844	No. of samples analysed	: 70

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES1835147--047	EWHEQ SS05_0.1	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	ES1835147--047	EWHEQ SS05_0.1	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	ES1835147--056	RWW_MW02_20181118	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
HDPE Soil Jar						
QC104_181112	----	----	----	29-Nov-2018	26-Nov-2018	**3**
HDPE Soil Jar						
RW SS01_0.1, RW SS02_0.2, RW SS03_0.1, AHEQ_SS07_0.2, AHEQ_SS06_0.1, AHEQ_SS05_0.1, AHEQ_SS04_0.1, AHEQ_SS04_0.2, AHEQ_SS03_0.1, AHEQ_SS02_0.1, AHEQ_SS01_0.1	----	----	----	29-Nov-2018	28-Nov-2018	**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.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) QC104_181112	**12-Nov-2018**	**----**	----	----	**29-Nov-2018**	26-Nov-2018	×
HDPE Soil Jar (EA055) RW SS01_0.1, RW SS02_0.2, RW SS03_0.1, AHEQ_SS07_0.2, AHEQ_SS06_0.1, AHEQ_SS05_0.1, AHEQ_SS04_0.1, AHEQ_SS04_0.2, AHEQ_SS03_0.1, AHEQ_SS02_0.1, AHEQ_SS01_0.1	**14-Nov-2018**	**----**	----	----	**29-Nov-2018**	28-Nov-2018	×
HDPE Soil Jar (EA055) QC105_20181115	**15-Nov-2018**	**----**	----	----	**29-Nov-2018**	29-Nov-2018	✓
HDPE Soil Jar (EA055) LPI MW31_2.9-3.0, LP SS01_0.1, LP SS02_0.3, LP SS03_0.1, EWHEQ SS08_0.2, ELS_SS03_0.1, AP_SS02_0.2, ELN_SS03_0.1, ELN_SS02_0.1, AP_SS08_0.1, AP_SS05_0.2, QC106_20181116, ELS_SS03_0.2	**16-Nov-2018**	**----**	----	----	**29-Nov-2018**	30-Nov-2018	✓
HDPE Soil Jar (EA055) LP SS04_0.1, LP SS05_0.2, LP SS06_0.1, LP SS07_0.2, LP SS08_0.2, ELS_SS04_0.2, ELS_SS02_0.2, ELS_SS01_0.1, AP_SS02_0.1, ELN_SS01_0.2, ELS_SS05_0.2, ELS_SS04_0.1, AP_SS07_0.1, AP_SS06_0.2, AP_SS04_0.1, AP_SS03_0.1, QC108_181117, QC109_181117	**17-Nov-2018**	**----**	----	----	**29-Nov-2018**	01-Dec-2018	✓
HDPE Soil Jar (EA055) AFD MW37_0.9-1.0, AFD MW37_2.9-3.0, LPI MW31_0.4-0.5, QC110_181118	**18-Nov-2018**	**----**	----	----	**29-Nov-2018**	02-Dec-2018	✓
HDPE Soil Jar (EA055) EWHEQ SS01_0.1, EWHEQ SS02_0.1, EWHEQ SS03_0.1, EWHEQ SS04_0.2, EWHEQ SS05_0.1, EWHEQ SS06_0.1, EWHEQ SS07_0.2	**19-Nov-2018**	**----**	----	----	**29-Nov-2018**	03-Dec-2018	✓
HDPE Soil Jar (EA055) RW SS04_0.2	**20-Nov-2018**	**----**	----	----	**29-Nov-2018**	04-Dec-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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QC104_181112	**12-Nov-2018**	**28-Nov-2018**	11-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS01_0.1, RW SS02_0.2, RW SS03_0.1, AHEQ_SS07_0.2, AHEQ_SS06_0.1, AHEQ_SS05_0.1, AHEQ_SS04_0.1, AHEQ_SS04_0.2, AHEQ_SS03_0.1, AHEQ_SS02_0.1, AHEQ_SS01_0.1	**14-Nov-2018**	**28-Nov-2018**	13-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
QC105_20181115	**15-Nov-2018**	**28-Nov-2018**	14-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LPI MW31_2.9-3.0, LP SS01_0.1, LP SS02_0.3, LP SS03_0.1, EWHEQ SS08_0.2, ELS_SS03_0.1, AP_SS02_0.2, ELN_SS03_0.1, ELN_SS02_0.1, AP_SS08_0.1, AP_SS05_0.2, QC106_20181116, ELS_SS03_0.2	**16-Nov-2018**	**28-Nov-2018**	15-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LP SS04_0.1, LP SS05_0.2, LP SS06_0.1, LP SS07_0.2, LP SS08_0.2, ELS_SS04_0.2, ELS_SS02_0.2, ELS_SS01_0.1, AP_SS02_0.1, ELN_SS01_0.2, ELS_SS05_0.2, ELS_SS04_0.1, AP_SS07_0.1, AP_SS06_0.2, AP_SS04_0.1, AP_SS03_0.1, QC108_181117, QC109_181117	**17-Nov-2018**	**28-Nov-2018**	16-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
AFD MW37_0.9-1.0, AFD MW37_2.9-3.0, LPI MW31_0.4-0.5, QC110_181118	**18-Nov-2018**	**28-Nov-2018**	17-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
EWHEQ SS01_0.1, EWHEQ SS02_0.1, EWHEQ SS03_0.1, EWHEQ SS04_0.2, EWHEQ SS05_0.1, EWHEQ SS06_0.1, EWHEQ SS07_0.2	**19-Nov-2018**	**28-Nov-2018**	18-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS04_0.2	**20-Nov-2018**	**28-Nov-2018**	19-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QC104_181112	**12-Nov-2018**	**28-Nov-2018**	11-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS01_0.1, RW SS02_0.2, RW SS03_0.1, AHEQ_SS07_0.2, AHEQ_SS06_0.1, AHEQ_SS05_0.1, AHEQ_SS04_0.1, AHEQ_SS04_0.2, AHEQ_SS03_0.1, AHEQ_SS02_0.1, AHEQ_SS01_0.1	**14-Nov-2018**	**28-Nov-2018**	13-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
QC105_20181115	**15-Nov-2018**	**28-Nov-2018**	14-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LPI MW31_2.9-3.0, LP SS01_0.1, LP SS02_0.3, LP SS03_0.1, EWHEQ SS08_0.2, ELS_SS03_0.1, AP_SS02_0.2, ELN_SS03_0.1, ELN_SS02_0.1, AP_SS08_0.1, AP_SS05_0.2, QC106_20181116, ELS_SS03_0.2	**16-Nov-2018**	**28-Nov-2018**	15-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LP SS04_0.1, LP SS05_0.2, LP SS06_0.1, LP SS07_0.2, LP SS08_0.2, ELS_SS04_0.2, ELS_SS02_0.2, ELS_SS01_0.1, AP_SS02_0.1, ELN_SS01_0.2, ELS_SS05_0.2, ELS_SS04_0.1, AP_SS07_0.1, AP_SS06_0.2, AP_SS04_0.1, AP_SS03_0.1, QC108_181117, QC109_181117	**17-Nov-2018**	**28-Nov-2018**	16-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
AFD MW37_0.9-1.0, AFD MW37_2.9-3.0, LPI MW31_0.4-0.5, QC110_181118	**18-Nov-2018**	**28-Nov-2018**	17-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
EWHEQ SS01_0.1, EWHEQ SS02_0.1, EWHEQ SS03_0.1, EWHEQ SS04_0.2, EWHEQ SS05_0.1, EWHEQ SS06_0.1, EWHEQ SS07_0.2	**19-Nov-2018**	**28-Nov-2018**	18-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS04_0.2	**20-Nov-2018**	**28-Nov-2018**	19-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QC104_181112	**12-Nov-2018**	**28-Nov-2018**	11-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS01_0.1, RW SS02_0.2, RW SS03_0.1, AHEQ_SS07_0.2, AHEQ_SS06_0.1, AHEQ_SS05_0.1, AHEQ_SS04_0.1, AHEQ_SS04_0.2, AHEQ_SS03_0.1, AHEQ_SS02_0.1, AHEQ_SS01_0.1	**14-Nov-2018**	**28-Nov-2018**	13-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
QC105_20181115	**15-Nov-2018**	**28-Nov-2018**	14-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LPI MW31_2.9-3.0, LP SS01_0.1, LP SS02_0.3, LP SS03_0.1, EWHEQ SS08_0.2, ELS_SS03_0.1, AP_SS02_0.2, ELN_SS03_0.1, ELN_SS02_0.1, AP_SS08_0.1, AP_SS05_0.2, QC106_20181116, ELS_SS03_0.2	**16-Nov-2018**	**28-Nov-2018**	15-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LP SS04_0.1, LP SS05_0.2, LP SS06_0.1, LP SS07_0.2, LP SS08_0.2, ELS_SS04_0.2, ELS_SS02_0.2, ELS_SS01_0.1, AP_SS02_0.1, ELN_SS01_0.2, ELS_SS05_0.2, ELS_SS04_0.1, AP_SS07_0.1, AP_SS06_0.2, AP_SS04_0.1, AP_SS03_0.1, QC108_181117, QC109_181117	**17-Nov-2018**	**28-Nov-2018**	16-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
AFD MW37_0.9-1.0, AFD MW37_2.9-3.0, LPI MW31_0.4-0.5, QC110_181118	**18-Nov-2018**	**28-Nov-2018**	17-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
EWHEQ SS01_0.1, EWHEQ SS02_0.1, EWHEQ SS03_0.1, EWHEQ SS04_0.2, EWHEQ SS05_0.1, EWHEQ SS06_0.1, EWHEQ SS07_0.2	**19-Nov-2018**	**28-Nov-2018**	18-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS04_0.2	**20-Nov-2018**	**28-Nov-2018**	19-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QC104_181112	**12-Nov-2018**	**28-Nov-2018**	11-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS01_0.1, RW SS02_0.2, RW SS03_0.1, AHEQ_SS07_0.2, AHEQ_SS06_0.1, AHEQ_SS05_0.1, AHEQ_SS04_0.1, AHEQ_SS04_0.2, AHEQ_SS03_0.1, AHEQ_SS02_0.1, AHEQ_SS01_0.1	**14-Nov-2018**	**28-Nov-2018**	13-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
QC105_20181115	**15-Nov-2018**	**28-Nov-2018**	14-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LPI MW31_2.9-3.0, LP SS01_0.1, LP SS02_0.3, LP SS03_0.1, EWHEQ SS08_0.2, ELS_SS03_0.1, AP_SS02_0.2, ELN_SS03_0.1, ELN_SS02_0.1, AP_SS08_0.1, AP_SS05_0.2, QC106_20181116, ELS_SS03_0.2	**16-Nov-2018**	**28-Nov-2018**	15-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
LP SS04_0.1, LP SS05_0.2, LP SS06_0.1, LP SS07_0.2, LP SS08_0.2, ELS_SS04_0.2, ELS_SS02_0.2, ELS_SS01_0.1, AP_SS02_0.1, ELN_SS01_0.2, ELS_SS05_0.2, ELS_SS04_0.1, AP_SS07_0.1, AP_SS06_0.2, AP_SS04_0.1, AP_SS03_0.1, QC108_181117, QC109_181117	**17-Nov-2018**	**28-Nov-2018**	16-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
AFD MW37_0.9-1.0, AFD MW37_2.9-3.0, LPI MW31_0.4-0.5, QC110_181118	**18-Nov-2018**	**28-Nov-2018**	17-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
EWHEQ SS01_0.1, EWHEQ SS02_0.1, EWHEQ SS03_0.1, EWHEQ SS04_0.2, EWHEQ SS05_0.1, EWHEQ SS06_0.1, EWHEQ SS07_0.2	**19-Nov-2018**	**28-Nov-2018**	18-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X)							
RW SS04_0.2	**20-Nov-2018**	**28-Nov-2018**	19-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) QC104_181112	**12-Nov-2018**	**28-Nov-2018**	11-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X) RW SS01_0.1, RW SS02_0.2, RW SS03_0.1, AHEQ_SS07_0.2, AHEQ_SS06_0.1, AHEQ_SS05_0.1, AHEQ_SS04_0.1, AHEQ_SS04_0.2, AHEQ_SS03_0.1, AHEQ_SS02_0.1, AHEQ_SS01_0.1	**14-Nov-2018**	**28-Nov-2018**	13-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X) QC105_20181115	**15-Nov-2018**	**28-Nov-2018**	14-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X) LPI MW31_2.9-3.0, LP SS01_0.1, LP SS02_0.3, LP SS03_0.1, EWHEQ SS08_0.2, ELS_SS03_0.1, AP_SS02_0.2, ELN_SS03_0.1, ELN_SS02_0.1, AP_SS08_0.1, AP_SS05_0.2, QC106_20181116, ELS_SS03_0.2	**16-Nov-2018**	**28-Nov-2018**	15-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X) LP SS04_0.1, LP SS05_0.2, LP SS06_0.1, LP SS07_0.2, LP SS08_0.2, ELS_SS04_0.2, ELS_SS02_0.2, ELS_SS01_0.1, AP_SS02_0.1, ELN_SS01_0.2, ELS_SS05_0.2, ELS_SS04_0.1, AP_SS07_0.1, AP_SS06_0.2, AP_SS04_0.1, AP_SS03_0.1, QC108_181117, QC109_181117	**17-Nov-2018**	**28-Nov-2018**	16-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X) AFD MW37_0.9-1.0, AFD MW37_2.9-3.0, LPI MW31_0.4-0.5, QC110_181118	**18-Nov-2018**	**28-Nov-2018**	17-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X) EWHEQ SS01_0.1, EWHEQ SS02_0.1, EWHEQ SS03_0.1, EWHEQ SS04_0.2, EWHEQ SS05_0.1, EWHEQ SS06_0.1, EWHEQ SS07_0.2	**19-Nov-2018**	**28-Nov-2018**	18-May-2019	✓	**28-Nov-2018**	07-Jan-2019	✓
HDPE Soil Jar (EP231X) RW SS04_0.2	**20-Nov-2018**	**28-Nov-2018**	19-May-2019	✓	**28-Nov-2018**	07-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

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) QC307_181111	**11-Nov-2018**	**29-Nov-2018**	10-May-2019	✓	**29-Nov-2018**	10-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC308_181112	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	11-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC309_181115	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	14-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW01_20181118, RWW_MW02_20181118, RWW_MW03_20181118, RWW_MW04_20181118, RWW_MW05_20181118, RWW_MW07_20181118, RWW_MW08_20181118, QC310_181118	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW06_20181118, QC311_181119 GM, QC311_181119 LM	**19-Nov-2018**	**29-Nov-2018**	18-May-2019	✓	**29-Nov-2018**	18-May-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST) QC307_181111	**11-Nov-2018**	**29-Nov-2018**	10-May-2019	✓	**29-Nov-2018**	10-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC308_181112	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	11-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC309_181115	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	14-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW01_20181118, RWW_MW02_20181118, RWW_MW03_20181118, RWW_MW04_20181118, RWW_MW05_20181118, RWW_MW07_20181118, RWW_MW08_20181118, QC310_181118	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW06_20181118, QC311_181119 GM, QC311_181119 LM	**19-Nov-2018**	**29-Nov-2018**	18-May-2019	✓	**29-Nov-2018**	18-May-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
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST) QC307_181111	**11-Nov-2018**	**29-Nov-2018**	10-May-2019	✓	**29-Nov-2018**	10-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC308_181112	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	11-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC309_181115	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	14-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW01_20181118, RWW_MW02_20181118, RWW_MW03_20181118, RWW_MW04_20181118, RWW_MW05_20181118, RWW_MW07_20181118, RWW_MW08_20181118, QC310_181118	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW06_20181118, QC311_181119 GM, QC311_181119 LM	**19-Nov-2018**	**29-Nov-2018**	18-May-2019	✓	**29-Nov-2018**	18-May-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) QC307_181111	**11-Nov-2018**	**29-Nov-2018**	10-May-2019	✓	**29-Nov-2018**	10-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC308_181112	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	11-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC309_181115	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	14-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW01_20181118, RWW_MW02_20181118, RWW_MW03_20181118, RWW_MW04_20181118, RWW_MW05_20181118, RWW_MW07_20181118, RWW_MW08_20181118, QC310_181118	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW06_20181118, QC311_181119 GM, QC311_181119 LM	**19-Nov-2018**	**29-Nov-2018**	18-May-2019	✓	**29-Nov-2018**	18-May-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
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST) QC307_181111	**11-Nov-2018**	**29-Nov-2018**	10-May-2019	✓	**29-Nov-2018**	10-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC308_181112	**12-Nov-2018**	**29-Nov-2018**	11-May-2019	✓	**29-Nov-2018**	11-May-2019	✓
HDPE (no PTFE) (EP231X-ST) QC309_181115	**15-Nov-2018**	**29-Nov-2018**	14-May-2019	✓	**29-Nov-2018**	14-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW01_20181118, RWW_MW02_20181118, RWW_MW03_20181118, RWW_MW04_20181118, RWW_MW05_20181118, RWW_MW07_20181118, RWW_MW08_20181118, QC310_181118	**18-Nov-2018**	**29-Nov-2018**	17-May-2019	✓	**29-Nov-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X-ST) RWW_MW06_20181118, QC311_181119 GM, QC311_181119 LM	**19-Nov-2018**	**29-Nov-2018**	18-May-2019	✓	**29-Nov-2018**	18-May-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: **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	8	80	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	56	**10.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	56	**5.36**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	56	**5.36**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	56	**5.36**	**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-ST	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**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. 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
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 targeted to pristine environmental and drinking waters reporting 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
Sample Extraction for PFAS	EP231-PR	SOIL	In house
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

Updated GC received 4/12/18 2:30pm

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: AECOM Australia
ADDRESS / OFFICE: AECOM Brisbane, 540 Wickham Street, Fortitude Valley 4006, QLD
PROJECT MANAGER (PM): Carina Jakobi
PROJECT ID: 60588844
SITE: Project Sam — P.O. NO.:
RESULTS REQUIRED (Date): Standard TAT — QUOTE NO.:

SAMPLER: G. Mueller
MOBILE: 0439 042 977
PHONE:
EMAIL REPORT TO: Carina.Jakobi@aecom.com, James.Peachey@aecom.com
EMAIL INVOICE TO: (if different to report)
ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS Laboratory Group

FOR LABORATORY USE ONLY
CONTACT: PH: MOB:
QUOTE: EMAIL:
DATE RECEIVED: MAY
SAMPLE TEMPERATURE:
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	PFAS EP231X (PFAS Full suite 28 analytes) - Supertrace
1	LPI_MW07_181125	W	25/11/2018		1 x P	1	x
2	LPI_MW26_181126	W	25/11/2018		1 x P	1	x
3	LPI_MW30_181125	W	25/11/2018		1 x P	1	x
4	LPI_MW24_181126	W	25/11/2018		1 x P	1	x
5	LPI_MW21_181125	W	25/11/2018		1 x P	1	x
6	LPI_MW29_181126	W	25/11/2018		1 x P	1	x
7	LPI_MW28_181125	W	25/11/2018		1 x P	1	x
8	LPI_MW27_181126	W	25/11/2018		1 x P	1	x
9	LPI_MW25_181126	W	25/11/2018		1 x P	1	x
10	LPI_MW19_181125	W	25/11/2018		1 x P	1	x
11	QC123_181125	W	25/11/2018		1 x P	1	x
12	QC317_181126	W	25/11/2018		1 x P	1	x
13	ELS_MW28-181126	W	26/11/2018		1 x P	1	x
14	ELN_MW04_181126	W	26/11/2018		1 x P	1	x
15	ELN_MW10_181126	W	26/11/2018		1 x P	1	x
16	ELN_MW30_181126	W	26/11/2018		1 x P	1	x
17	ELS_MW29_181126	W	26/11/2018		1 x P	1	x
18	ELN_MW09_181126	W	26/11/2018		1 x P	1	x
19	QC124_181126	W	26/11/2018		1 x P	1	x
20	QC318_181126	W	26/11/2018		1 x P	1	x
21	ELN_MW32_181127	W	27/11/2018		1 x P	1	x
22	ELN_MW07_181127	W	27/11/2018		1 x P	1	x
23	ELN_MW06_181127	W	27/11/2018		1 x P	1	x
24	ELS_MW19_181127	W	27/11/2018		1 x P	1	x
25	ELS_MW18_181127	W	27/11/2018		1 x P	1	x
26	SA26_181127	W	27/11/2018		1 x P	1	x
27	SA005_181127	W	27/11/2018		1 x P	1	x
28	SA27_181127	W	27/11/2018		1 x P	1	x
29	SA15_181127	W	27/11/2018		1 x P	1	x
30	SA12_181127	W	27/11/2018		1 x P	1	x
31	RN109710_181127	W	27/11/2018		1 x P	1	x
32	QC126_181127	W	27/11/2018		1 x P	1	x
33	QC319_181127	W	27/11/2018		1 x P	1	x
34	SW/BEN/DOS_181128	W	28/11/2018		1 x P	1	x

Subcon / Forward Lab / Split WO
Lab / Analysis: QC223, QC224, QC225
Organised By / Date: NML
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Gabrielle Mueller	28/11/2018	Name:	Date:	Con' Note No:
Of: AECOM	Time:	Of:	Time:	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS LABORATORY GROUP

COC Page ___ of ___

ENFM (204/5)

Environmental Division
Sydney
Work Order Reference
ES1836405

Telephone : + 61-2-8784 8555

ANZ

FQM - Generic Chain of Custody Form

James.Peachey@aecom.com

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS / OFFICE: 540 Wickham St Fortitude valley	SAMPLER: G. MUELLER.	Destination Laboratory
PROJECT MANAGER (PM): J. PEACHEY	SITE: PROJECT SPAM	MOBILE: 0439 042 977 PHONE:	ALS SYDNEY
PROJECT NUMBER & TASK CODE: 605888441	P.O. NO.:	EMAIL REPORT TO: Carina.Jakobi@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
Please send samples QC224-181126 and QC225-181127 to NM1 Sydney for analysis as per attached COC

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	QC124-181126	W	26-11-18		IP	1	X
=	QC224-181126						X See Comments
	QC318-181126.						X
	ELN-MW32-181127		27-11-18				X
	ELN-MW07-181127						X
	ELN-MW06-181127						X
	ELS-MW19-181127						X
	ELS-MW18-181127						X
	SA26-181127						X
	SA005-181127						X
	SA27-181127						X
	SA15-181127						X
	SA12-181127						X
	RN109710-181127						X
	QC125-181127						X
=	QC225-181127						X See comments.
	QC319-181127						X
	SW/BEN/D05-181128		28-11-18				X

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Gabrielle Mueller	Date: 28-11-18	Name:	Date:	Name: Manish	Date: 5/12/18	Con' Note No: 1011
Of: AECOM	Time:	Of:	Time:	Of: ACS Smithfield	Time: 9:00am	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

ANZ

FQM - Generic Chain of Custody Form

AECOM

James.Peachey@aecom.com

Q4AN(EV)-007-FM1

CONSULTANT: AECOM	ADDRESS / OFFICE: 540 Wickham St → Fortitude Valley	SAMPLER: G.MUELLER	**Destination Laboratory**
PROJECT MANAGER (PM): J. PEACHEY	SITE: PROJECTSAM.	MOBILE: 0439042977 PHONE:	ALS SYDNEY
PROJECT NUMBER & TASK CODE: 60588844	P.O. NO.:	EMAIL REPORT TO: Carina.Jakobi@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
Please send sample QC223-181125 to NMI Sydney for analysis as per attached COC.

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD	
	LPI-MW07-181125	W	25-11-18		1P	1	X	
	LPI-MW26-181125	↓	↓		↓	↓	X	
	LPI-MW30-181125						X	
	LPI-MW24-181125						X	
	LPI-MW21-181125						X	
	LPI-MW29-181125						X	
	LPI-MW28-181125						X	
	LPI-MW27-181125						X	
	LPI-MW25-181125						X	
	LPI-MW19-181125						X	
	QC123-181125						X	
=	QC223-181125						X	see comments
	QC317-181125		↓				X	
	ELS-MW28-181126		26-11-18				X	
	ELN-MW04-181126						X	
	ELN-MW10-181126						X	
	ELN-MW30-181126						X	
	ELS-MW29-181126						X	
	ELN-MW09-181126	↓	↓		↓	↓	X	

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Gabrielle Mueller	Date: 28-11-18	Name:	Date:	Name: Manash	Date: 3/12/18	Con' Note No: 7011
Of: AECOM	Time:	Of:	Time:	Of: ALS Smithfield	Time: 9:00am	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes**: Jar = Unpreserved glass jar

COC Page 2 of 2

Updated COC received
4/12/18 2:39pm

NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:	Townsville		
Company Name:	AECOM Australia Pty Ltd		
Address:	Level 5 - 7-13 Tomlins Street, South Townsville, QLD 4810		
Contact:	Carina Jakobi (carina.jakobi@aecom.com)	**Additional email(s) for reports**	james.peachey@aecom.com
Sampler:	Luke McIver (luke.mciver@aecom.com		
ABN:		Additional email(s) invoice: AP_CustomerService.ANZ@aecom.com	
Contact email:	carina.jakobi@aecom.com		

Job Reference : Project Sam 60588844

Laboratory Use Only

NMI Quote Number: Valid until:

LIMS Reference:

TURN AROUND TIME REQUESTED (Working days):

24 hrs	48 hrs	3-4	7	10	20	other (please specify)
100%	50%	25%	Standard		dioxins	
			X			

*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission

Esdat format required

NMI REF (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	SAMPLE MATRIX (water / soil / biota)	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)													COMMENTS
				Hold	PFAS Extended Suite supertrace analysis (low level)	PFAS Extended Suite											
	QC223_181125	25/11/2018	Water		x												
	QC224_181126	26/11/2018	Water		x												
	QC225_181127	27/11/2018	Water		x												
	QC220_181123	23/11/2018	Water		x												
	QC221_181124	24/11/2018	Water		x												
	QC215_181121	21/11/2018	Soil			x											
	QC214_20181123	23/11/2018	Water		x												
	QC217_181121	21/11/2018	Water		x												
	QC216_181121	21/11/2018	Water		x												
	QC218_181122	22/11/2018	Water		x												

Relinquished by:
Print Name:
Date & Time: / / : hrs
Signature:

Received at NMI Laboratory by:
Print Name:
Date & Time: / / hrs
Signature:

PAGE No: of PAGES

If multiple pages, ensure ALL pages are stapled together

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

FORTITUDE VALLEY

James.peachey@aecom.com

CONSULTANT: AECOM	ADDRESS / OFFICE: 540 WICKHAM ST	SAMPLER: G.MUELLER	**Destination Laboratory**
PROJECT MANAGER (PM): J.PEACHEY	SITE: PROJECT SAM	MOBILE: 0439042977 PHONE:	NM1 SYDNEY
PROJECT NUMBER & TASK CODE: 60558844	P.O. NO.:	EMAIL REPORT TO: [illegible] carina.jakobi@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	
	QC223-181125	W	25-11-18		1P	1	
	QC224-181126	W	26-11-18		1P	1	
	QC225-181127	W	27-11-18		1P	1	
	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	

RELINQUISHED BY:		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name:	Date:	Name:	Date:	Name: Manish	Date: 5/12/18	Con' Note No:
Of:	Time:	Of:	Time:	Of: AECOM	Time: 8:00am	Transport Co: TOLL

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 1 of 1

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1836405**	Page	: 1 of 17
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: CARINA JAKOBI	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 03-Dec-2018 09:00
Order number	: 60588844	Date Analysis Commenced	: 07-Dec-2018
C-O-C number	: ----	Issue Date	: 20-Dec-2018 16:21
Sampler	: G. Mueller		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 34		
No. of samples analysed	: 34		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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.

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.

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.

- EP231X-ST: LOR raised for PFBS due to sample matrix interferences.
- Amendment (20/12/2018): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Gabrielle Mueller on 20/12/18. All analysis results are as per the previous report.

Analytical Results

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

				LPI_MW07_181125	LPI_MW26_181125	LPI_MW30_181125	LPI_MW32_181125	LPI_MW21_181125
				25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00
				ES1836405-001	ES1836405-002	ES1836405-003	ES1836405-004	ES1836405-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.118**	<0.0050	**0.0053**	**0.0034**	**0.0113**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0901**	**0.0005**	**0.0034**	**0.0018**	**0.0129**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**1.08**	**0.0032**	**0.0354**	**0.0101**	**0.174**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0610**	<0.0005	<0.0005	<0.0005	**0.0020**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**1.44**	**0.0031**	**0.0133**	**0.0026**	**0.455**
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	**0.017**	<0.002	<0.002	<0.002	**0.006**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0528**	<0.0005	**0.0016**	**0.0014**	**0.0114**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.184**	<0.0005	**0.0076**	**0.0009**	**0.0343**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0635**	<0.0005	**0.0033**	**0.0006**	**0.0201**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.111**	<0.0005	**0.0051**	<0.0005	**0.0287**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	**0.0034**	<0.0005	<0.0005	<0.0005	**0.0007**
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)				LPI_MW07_181125	LPI_MW26_181125	LPI_MW30_181125	LPI_MW32_181125	LPI_MW21_181125
				25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00
				ES1836405-001	ES1836405-002	ES1836405-003	ES1836405-004	ES1836405-005
				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	**0.075**	**0.077**	**0.045**	**0.026**	**0.016**
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	**3.30**	**0.0838**	**0.120**	**0.0468**	**0.772**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**2.52**	**0.0063**	**0.0487**	**0.0127**	**0.629**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**3.14**	**0.0833**	**0.117**	**0.0450**	**0.757**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**106**	**94.4**	**101**	**95.1**	**104**
13C8-PFOA	----	0.0005	%	**92.0**	**98.9**	**96.2**	**102**	**97.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				LPI_MW29_181125	LPI_MW28_181125	LPI_MW27_181125	LPI_MW25_181125	LPI_MW19_181125
				25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00
				ES1836405-006	ES1836405-007	ES1836405-008	ES1836405-009	ES1836405-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0060**	**0.0027**	**0.0318**	**0.0038**	**0.0029**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0061**	**0.0023**	**0.0248**	**0.0017**	**0.0024**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0732**	**0.0246**	**0.243**	**0.0115**	**0.0156**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0030**	<0.0005	**0.0156**	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0933**	**0.0522**	**1.12**	**0.0174**	**0.0241**
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	**0.005**	**0.007**	**0.007**	**0.004**	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0057**	**0.0133**	**0.0217**	**0.0140**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0122**	**0.0120**	**0.0914**	**0.0094**	**0.0030**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0060**	**0.0074**	**0.0169**	**0.0074**	**0.0006**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0083**	**0.0052**	**0.0324**	**0.0021**	**0.0041**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	**0.0008**	**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)				LPI_MW29_181125	LPI_MW28_181125	LPI_MW27_181125	LPI_MW25_181125	LPI_MW19_181125
				25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00	25-Nov-2018 00:00
				ES1836405-006	ES1836405-007	ES1836405-008	ES1836405-009	ES1836405-010
				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	**0.031**	**0.043**	**0.039**	**0.019**	**0.085**
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	**0.250**	**0.170**	**1.64**	**0.0903**	**0.138**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.166**	**0.0768**	**1.36**	**0.0289**	**0.0397**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.241**	**0.167**	**1.60**	**0.0886**	**0.135**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**95.6**	**98.3**	**86.4**	**95.5**	**101**
13C8-PFOA	----	0.0005	%	**99.6**	**102**	**95.6**	**98.4**	**95.8**

Analytical Results

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

				QC123_181125	QC317_181125	ELS_MW28_181126	ELN_MW04_181126	ELN_MW10_181126
				25-Nov-2018 00:00	25-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00
				ES1836405-011	ES1836405-012	ES1836405-013	ES1836405-014	ES1836405-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0050	<0.0005	<0.0050	**0.0008**	<0.0050
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0005**	<0.0005	**0.0006**	**0.0008**	**0.0007**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0031**	<0.0005	**0.0069**	**0.0077**	**0.0089**
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**	<0.0003	**0.0132**	**0.0137**	**0.0188**
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	**0.0008**	<0.0005	**0.0009**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	**0.0013**	**0.0007**	**0.0008**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	**0.0006**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	**0.0006**	<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)				QC123_181125	QC317_181125	ELS_MW28_181126	ELN_MW04_181126	ELN_MW10_181126
				25-Nov-2018 00:00	25-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00
				ES1836405-011	ES1836405-012	ES1836405-013	ES1836405-014	ES1836405-015
				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	**0.078**	<0.001	**0.034**	**0.006**	**0.094**
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	**0.0848**	<0.0003	**0.0574**	**0.0303**	**0.124**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0063**	<0.0003	**0.0201**	**0.0214**	**0.0277**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0843**	<0.0003	**0.0568**	**0.0295**	**0.123**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**97.6**	**74.2**	**97.8**	**96.9**	**101**
13C8-PFOA	----	0.0005	%	**97.6**	**90.2**	**97.8**	**96.2**	**96.6**

Analytical Results

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

				ELN_MW30_181126	ELS_MW29_181126	ELN_MW09_181126	QC124_181126	QC318_181126
				26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00
				ES1836405-016	ES1836405-017	ES1836405-018	ES1836405-019	ES1836405-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0050	<0.0050	**0.0036**	<0.0050	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	**0.0014**	**0.0045**	**0.0007**	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0016**	**0.0190**	**0.0894**	**0.0090**	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	**0.0014**	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0009**	**0.0181**	**0.288**	**0.0180**	<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	**0.004**	**0.019**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	**0.0031**	**0.0346**	**0.0009**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	**0.0046**	**0.0428**	**0.0009**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	**0.0018**	**0.0275**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	**0.0012**	**0.0262**	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	**0.0031**	<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)				ELN_MW30_181126	ELS_MW29_181126	ELN_MW09_181126	QC124_181126	QC318_181126
				26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00	26-Nov-2018 00:00
				ES1836405-016	ES1836405-017	ES1836405-018	ES1836405-019	ES1836405-020
				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	**0.036**	**0.073**	**0.062**	**0.092**	<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	**0.0385**	**0.126**	**0.602**	**0.122**	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0025**	**0.0371**	**0.377**	**0.0270**	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0385**	**0.125**	**0.593**	**0.121**	<0.0003
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**90.0**	**98.7**	**101**	**96.2**	**94.7**
13C8-PFOA	----	0.0005	%	**89.4**	**96.8**	**99.7**	**99.8**	**96.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				ELL_MW32_181127	ELN_MW07_181127	ELN_MW06_181127	ELS_MW19_181127	ELS_MW18_181127
				27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00
				ES1836405-021	ES1836405-022	ES1836405-023	ES1836405-024	ES1836405-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	**0.0021**	<0.0005	**0.0014**	**0.0115**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0007**	**0.0035**	<0.0005	**0.0034**	**0.0148**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0126**	**0.0642**	**0.0010**	**0.0573**	**0.214**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	**0.0028**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0251**	**0.113**	**0.0008**	**0.0907**	**0.431**
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	**0.011**	**0.002**	<0.002	**0.018**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0005**	**0.0128**	<0.0005	**0.0036**	**0.0403**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0005**	**0.0096**	<0.0005	**0.0062**	**0.0467**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0006**	**0.0070**	<0.0005	**0.0044**	**0.0183**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0013**	**0.0068**	<0.0005	**0.0051**	**0.0217**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	**0.0005**	<0.0005	<0.0005	**0.0015**
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)				ELL_MW32_181127	ELN_MW07_181127	ELN_MW06_181127	ELS_MW19_181127	ELS_MW18_181127
				27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00
				ES1836405-021	ES1836405-022	ES1836405-023	ES1836405-024	ES1836405-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	**0.034**	**0.010**	**0.021**	**0.029**	**0.013**
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**	**0.240**	**0.0248**	**0.201**	**0.834**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0377**	**0.177**	**0.0018**	**0.148**	**0.645**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0746**	**0.236**	**0.0248**	**0.198**	**0.814**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**99.0**	**103**	**103**	**96.0**	**101**
13C8-PFOA	----	0.0005	%	**96.7**	**99.2**	**98.1**	**93.6**	**94.6**

Analytical Results

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

				SA26_181127	SA005_181127	SA27_181127	SA15_181127	SA12_181127
				27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00
				ES1836405-026	ES1836405-027	ES1836405-028	ES1836405-029	ES1836405-030
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0041**	**0.0149**	**0.0014**	**0.0012**	**0.0016**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0032**	**0.0107**	**0.0014**	**0.0010**	**0.0012**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0188**	**0.0505**	**0.0201**	**0.0077**	**0.0073**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0005**	**0.0007**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0271**	**0.0158**	**0.0247**	**0.0095**	**0.0066**
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	**0.011**	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0009**	**0.0594**	<0.0005	<0.0005	**0.0008**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0039**	**0.0587**	<0.0005	<0.0005	**0.0009**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0010**	**0.0181**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0018**	**0.0066**	<0.0005	**0.0007**	<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)				SA26_181127	SA005_181127	SA27_181127	SA15_181127	SA12_181127
				27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00
				ES1836405-026	ES1836405-027	ES1836405-028	ES1836405-029	ES1836405-030
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<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	**0.0613**	**0.246**	**0.0476**	**0.0201**	**0.0184**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0459**	**0.0663**	**0.0448**	**0.0172**	**0.0139**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0576**	**0.235**	**0.0462**	**0.0191**	**0.0172**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**96.4**	**91.5**	**97.9**	**91.7**	**97.6**
13C8-PFOA	----	0.0005	%	**99.6**	**103**	**103**	**96.3**	**98.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				RN109710_181127	QC125_181127	QC319_181127	SW/BEN/DOS	----
				27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	28-Nov-2018 00:00	----
				ES1836405-031	ES1836405-032	ES1836405-033	ES1836405-034	--------
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0080**	**0.0021**	<0.0005	<0.0005	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0081**	**0.0036**	<0.0005	<0.0005	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0630**	**0.0649**	<0.0005	<0.0005	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0020**	**0.0008**	<0.0005	<0.0005	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0437**	**0.114**	<0.0003	**0.0006**	----
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	**0.024**	**0.009**	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.134**	**0.0128**	<0.0005	<0.0005	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.100**	**0.0098**	<0.0005	<0.0005	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0383**	**0.0072**	<0.0005	<0.0005	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0075**	**0.0072**	<0.0005	<0.0005	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<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	----
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)				RN109710_181127	QC125_181127	QC319_181127	SW/BEN/DOS	----
				27-Nov-2018 00:00	27-Nov-2018 00:00	27-Nov-2018 00:00	28-Nov-2018 00:00	----
				ES1836405-031	ES1836405-032	ES1836405-033	ES1836405-034	--------
				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	**0.065**	**0.010**	<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	**0.494**	**0.242**	<0.0003	**0.0006**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.107**	**0.179**	<0.0003	**0.0006**	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.484**	**0.237**	<0.0003	**0.0006**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**102**	**102**	**95.8**	**84.2**	----
13C8-PFOA	----	0.0005	%	**100**	**96.7**	**100**	**93.7**	----

Surrogate Control Limits

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

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1836405**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: CARINA JAKOBI	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: carina.jakobi@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 60588844	Page	: 1 of 3
Order number	: 60588844	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project SAM		
Sampler	: G. Mueller		

Dates

Date Samples Received	: 03-Dec-2018 09:00	Issue Date	: 05-Dec-2018
Client Requested Due Date	: 11-Dec-2018	Scheduled Reporting Date	: **11-Dec-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 23.0 - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 34 / 34

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples QC223_181125, QC224_181126 and QC225_181127 have been forwarded to NMI as per COC request.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The 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	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
ES1836405-001	25-Nov-2018 00:00	LPI_MW07_181125	☐
ES1836405-002	25-Nov-2018 00:00	LPI_MW26_181125	☐
ES1836405-003	25-Nov-2018 00:00	LPI_MW30_181125	☐
ES1836405-004	25-Nov-2018 00:00	LPI_MW24_181125	☐
ES1836405-005	25-Nov-2018 00:00	LPI_MW21_181125	☐
ES1836405-006	25-Nov-2018 00:00	LPI_MW29_181125	☐
ES1836405-007	25-Nov-2018 00:00	LPI_MW28_181125	☐
ES1836405-008	25-Nov-2018 00:00	LPI_MW27_181125	☐
ES1836405-009	25-Nov-2018 00:00	LPI_MW25_181125	☐
ES1836405-010	25-Nov-2018 00:00	LPI_MW19_181125	☐
ES1836405-011	25-Nov-2018 00:00	QC123_181125	☐
ES1836405-012	25-Nov-2018 00:00	OC317_181125	☐
ES1836405-013	26-Nov-2018 00:00	ELS_MW28_181126	☐
ES1836405-014	26-Nov-2018 00:00	ELN_MW04_181126	☐
ES1836405-015	26-Nov-2018 00:00	ELN_MW10_181126	☐
ES1836405-016	26-Nov-2018 00:00	ELN_MW30_181126	☐
ES1836405-017	26-Nov-2018 00:00	ELS_MW29_181126	☐
ES1836405-018	26-Nov-2018 00:00	ELN_MW09_181126	☐
ES1836405-019	26-Nov-2018 00:00	QC124_181126	☐
ES1836405-020	26-Nov-2018 00:00	QC318_181126	☐
ES1836405-021	27-Nov-2018 00:00	ELN_MW32_181127	☐
ES1836405-022	27-Nov-2018 00:00	ELN_MW07_181127	☐
ES1836405-023	27-Nov-2018 00:00	ELN_MW06_181127	☐
ES1836405-024	27-Nov-2018 00:00	ELS_MW19_181127	☐
ES1836405-025	27-Nov-2018 00:00	ELS_MW18_181127	☐
ES1836405-026	27-Nov-2018 00:00	SA26_181127	☐
ES1836405-027	27-Nov-2018 00:00	SA005_181127	☐
ES1836405-028	27-Nov-2018 00:00	SA27_181127	☐
ES1836405-029	27-Nov-2018 00:00	SA15_181127	☐
ES1836405-030	27-Nov-2018 00:00	SA12_181127	☐
ES1836405-031	27-Nov-2018 00:00	RN109710_181127	☐
ES1836405-032	27-Nov-2018 00:00	QC125_181127	☐
ES1836405-033	27-Nov-2018 00:00	QC319_181127	☐
ES1836405-034	28-Nov-2018 00:00	SW/BEN/DOS_181126	☐

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

CARINA JAKOBI

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

JAMES PEACHEY

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1836405**	Page	: 1 of 12
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: CARINA JAKOBI	Contact	: Brenda Hong
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 03-Dec-2018
Order number	: 60588844	Date Analysis Commenced	: 07-Dec-2018
C-O-C number	: ----	Issue Date	: 20-Dec-2018
Sampler	: G. Mueller		
Site	: Project SAM		
Quote number	: EN/004/16		
No. of samples received	: 34		
No. of samples analysed	: 34		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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

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.

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: 2079182)									
ES1836405-008	LPI_MW27_181125	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	1.12	1.12	0.286	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0318	0.0329	3.22	0% - 20%
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0248	0.0204	19.5	0% - 20%
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.243	0.243	0.00	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0156	0.0136	13.7	0% - 20%
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
ES1836405-011	QC123_181125	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0032	0.0029	8.58	0% - 50%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0050	<0.0050	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0005	0.0006	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0031	0.0031	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: 2079185)									

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: 2079185) - continued									
ES1836405-023	ELN_MW06_181127	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	0.0010	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
ES1836405-030	SA12_181127	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0066	0.0067	0.00	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0016	0.0016	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0012	0.0011	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0073	0.0074	1.90	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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2079182)									
ES1836405-008	LPI_MW27_181125	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0217	0.0209	3.84	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0914	0.0863	5.72	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0169	0.0157	7.72	0% - 20%
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0324	0.0326	0.739	0% - 20%
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	0.0009	0.0011	16.0	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	0.007	0.007	0.00	No Limit
ES1836405-011	QC123_181125	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: 2079182) - continued									
ES1836405-011	QC123_181125	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: 2079185)									
ES1836405-023	ELN_MW06_181127	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
ES1836405-030	SA12_181127	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0008	0.0007	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0009	0.0008	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: 2079182)									
ES1836405-008	LPI_MW27_181125	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: 2079182) - continued									
ES1836405-008	LPI_MW27_181125	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
ES1836405-011	QC123_181125	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: 2079185)									
ES1836405-023	ELN_MW06_181127	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
ES1836405-030	SA12_181127	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: 2079185) - continued									
ES1836405-030	SA12_181127	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: 2079182)									
ES1836405-008	LPI_MW27_181125	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	0.039	0.039	0.00	0% - 20%
		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
ES1836405-011	QC123_181125	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	0.078	0.074	5.88	0% - 20%
		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: 2079185)									
ES1836405-023	ELN_MW06_181127	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	0.021	0.020	0.00	0% - 20%
		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
ES1836405-030	SA12_181127	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: 2079185) - continued									
ES1836405-030	SA12_181127	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: 2079182)									
ES1836405-008	LPI_MW27_181125	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	1.64	1.63	0.732	0% - 20%
ES1836405-011	QC123_181125	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0848	0.0806	5.08	0% - 20%
EP231P: PFAS Sums (QC Lot: 2079185)									
ES1836405-023	ELN_MW06_181127	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0248	0.0219	12.4	0% - 20%
ES1836405-030	SA12_181127	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0184	0.0183	0.545	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: 2079182)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	106	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	97.0	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	107	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	100	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	53.0	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2079185)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	102	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	94.8	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	103	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	115	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	96.2	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	76.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2079182)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	59.9	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	106	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	107	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	113	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	109	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	105	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	93.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	94.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	61.6	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	54.6	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	59.8	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2079185)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	60.5	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	103	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	108	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	108	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	99.8	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	88.6	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	71.2	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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2079185) - continued								
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	63.8	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	60.4	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	50.3	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2079182)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	87.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	61.8	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	53.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	52.6	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	63.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	81.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	67.6	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2079185)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	82.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	56.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	49.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	62.3	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	52.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	78.6	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	89.8	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2079182)								
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	123	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	119	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	79.2	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2079185)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	93.2	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	119	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	115	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	79.0	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: 2079182)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231P: PFAS Sums (QCLot: 2079185)								
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: 2079182)							
ES1836405-002	LPI_MW26_181125	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	68.0	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	98.4	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	106	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	99.2	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	94.0	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	51.4	30	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2079185)							
ES1836405-020	QC318_181126	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	89.6	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	88.6	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	96.0	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	108	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	92.0	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	83.6	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2079182)							
ES1836405-002	LPI_MW26_181125	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	49.3	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	99.8	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	99.8	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	106	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	104	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	100	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	84.2	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	84.2	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	63.4	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	67.4	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	51.5	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2079185)							

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: 2079185) - continued							
ES1836405-020	QC318_181126	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	53.8	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	93.8	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	95.6	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	99.6	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	101	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	90.2	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	82.2	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	67.4	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	68.8	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	64.4	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	45.5	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2079182)							
ES1836405-002	LPI_MW26_181125	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	79.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	54.2	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	54.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	52.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	45.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	51.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	59.8	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2079185)							
ES1836405-020	QC318_181126	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	50.0	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	48.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	62.5	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	49.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	81.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	74.4	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*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2079182)							
ES1836405-002	LPI_MW26_181125	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	125	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	# Not Determined	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	78.6	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2079185)							
ES1836405-020	QC318_181126	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	98.8	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	112	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	105	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	90.2	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1836405**	Page	: 1 of 8
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: CARINA JAKOBI	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 03-Dec-2018
Site	: Project SAM	Issue Date	: 20-Dec-2018
Sampler	: G. Mueller	No. of samples received	: 34
Order number	: 60588844	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.**
- **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							
EP231D: (n:2) Fluorotelomer Sulfonic Acids	ES1836405--002	LPI_MW26_181125	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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) LPI_MW07_181125, LPI_MW26_181125, LPI_MW30_181125, LPI_MW32_181125, LPI_MW21_181125, LPI_MW29_181125, LPI_MW28_181125, LPI_MW27_181125, LPI_MW25_181125, LPI_MW19_181125, QC123_181125, QC317_181125	**25-Nov-2018**	**07-Dec-2018**	24-May-2019	✓	**09-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X-ST) ELS_MW28_181126, ELN_MW04_181126, ELN_MW10_181126, ELN_MW30_181126, ELS_MW29_181126, ELN_MW09_181126, QC124_181126, QC318_181126	**26-Nov-2018**	**07-Dec-2018**	25-May-2019	✓	**09-Dec-2018**	25-May-2019	✓
HDPE (no PTFE) (EP231X-ST) ELL_MW32_181127, ELN_MW07_181127, ELN_MW06_181127, ELS_MW19_181127, ELS_MW18_181127, SA26_181127, SA005_181127, SA27_181127, SA15_181127, SA12_181127, RN109710_181127, QC125_181127, QC319_181127	**27-Nov-2018**	**07-Dec-2018**	26-May-2019	✓	**09-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X-ST) SW/BEN/DOS	**28-Nov-2018**	**07-Dec-2018**	27-May-2019	✓	**09-Dec-2018**	27-May-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)							
LPI_MW07_181125, LPI_MW26_181125, LPI_MW30_181125, LPI_MW32_181125, LPI_MW21_181125, LPI_MW29_181125, LPI_MW28_181125, LPI_MW27_181125, LPI_MW25_181125, LPI_MW19_181125, QC123_181125, QC317_181125	**25-Nov-2018**	**07-Dec-2018**	24-May-2019	✓	**09-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELS_MW28_181126, ELN_MW04_181126, ELN_MW10_181126, ELN_MW30_181126, ELS_MW29_181126, ELN_MW09_181126, QC124_181126, QC318_181126	**26-Nov-2018**	**07-Dec-2018**	25-May-2019	✓	**09-Dec-2018**	25-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELL_MW32_181127, ELN_MW07_181127, ELN_MW06_181127, ELS_MW19_181127, ELS_MW18_181127, SA26_181127, SA005_181127, SA27_181127, SA15_181127, SA12_181127, RN109710_181127, QC125_181127, QC319_181127	**27-Nov-2018**	**07-Dec-2018**	26-May-2019	✓	**09-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
SW/BEN/DOS	**28-Nov-2018**	**07-Dec-2018**	27-May-2019	✓	**09-Dec-2018**	27-May-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
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST)							
LPI_MW07_181125, LPI_MW26_181125, LPI_MW30_181125, LPI_MW32_181125, LPI_MW21_181125, LPI_MW29_181125, LPI_MW28_181125, LPI_MW27_181125, LPI_MW25_181125, LPI_MW19_181125, QC123_181125, QC317_181125	**25-Nov-2018**	**07-Dec-2018**	24-May-2019	✓	**09-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELS_MW28_181126, ELN_MW04_181126, ELN_MW10_181126, ELN_MW30_181126, ELS_MW29_181126, ELN_MW09_181126, QC124_181126, QC318_181126	**26-Nov-2018**	**07-Dec-2018**	25-May-2019	✓	**09-Dec-2018**	25-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELL_MW32_181127, ELN_MW07_181127, ELN_MW06_181127, ELS_MW19_181127, ELS_MW18_181127, SA26_181127, SA005_181127, SA27_181127, SA15_181127, SA12_181127, RN109710_181127, QC125_181127, QC319_181127	**27-Nov-2018**	**07-Dec-2018**	26-May-2019	✓	**09-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
SW/BEN/DOS	**28-Nov-2018**	**07-Dec-2018**	27-May-2019	✓	**09-Dec-2018**	27-May-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-ST)							
LPI_MW07_181125, LPI_MW26_181125, LPI_MW30_181125, LPI_MW32_181125, LPI_MW21_181125, LPI_MW29_181125, LPI_MW28_181125, LPI_MW27_181125, LPI_MW25_181125, LPI_MW19_181125, QC123_181125, QC317_181125	**25-Nov-2018**	**07-Dec-2018**	24-May-2019	✓	**09-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELS_MW28_181126, ELN_MW04_181126, ELN_MW10_181126, ELN_MW30_181126, ELS_MW29_181126, ELN_MW09_181126, QC124_181126, QC318_181126	**26-Nov-2018**	**07-Dec-2018**	25-May-2019	✓	**09-Dec-2018**	25-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELL_MW32_181127, ELN_MW07_181127, ELN_MW06_181127, ELS_MW19_181127, ELS_MW18_181127, SA26_181127, SA005_181127, SA27_181127, SA15_181127, SA12_181127, RN109710_181127, QC125_181127, QC319_181127	**27-Nov-2018**	**07-Dec-2018**	26-May-2019	✓	**09-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
SW/BEN/DOS	**28-Nov-2018**	**07-Dec-2018**	27-May-2019	✓	**09-Dec-2018**	27-May-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
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST)							
LPI_MW07_181125, LPI_MW26_181125, LPI_MW30_181125, LPI_MW32_181125, LPI_MW21_181125, LPI_MW29_181125, LPI_MW28_181125, LPI_MW27_181125, LPI_MW25_181125, LPI_MW19_181125, QC123_181125, QC317_181125	**25-Nov-2018**	**07-Dec-2018**	24-May-2019	✓	**09-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELS_MW28_181126, ELN_MW04_181126, ELN_MW10_181126, ELN_MW30_181126, ELS_MW29_181126, ELN_MW09_181126, QC124_181126, QC318_181126	**26-Nov-2018**	**07-Dec-2018**	25-May-2019	✓	**09-Dec-2018**	25-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
ELL_MW32_181127, ELN_MW07_181127, ELN_MW06_181127, ELS_MW19_181127, ELS_MW18_181127, SA26_181127, SA005_181127, SA27_181127, SA15_181127, SA12_181127, RN109710_181127, QC125_181127, QC319_181127	**27-Nov-2018**	**07-Dec-2018**	26-May-2019	✓	**09-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X-ST)							
SW/BEN/DOS	**28-Nov-2018**	**07-Dec-2018**	27-May-2019	✓	**09-Dec-2018**	27-May-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-ST	4	35	**11.43**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	2	35	**5.71**	**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 targeted to pristine environmental and drinking waters reporting 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

Fads 20/12/18 RP

Brenda Hong
Thursday, 20 December 2018 11:28 AM
Samples Sydney
Loren Schiavon; Andrew Epps

Subject: FW: Additional analysis request, our ref: 60588844

Hey Fads, please can you rebatch the below samples on std TAT?
Apparently we have to place all of the samples for these into LTS? Please confirm that this has been arranged.

MANAGING PROJECTS OVER THE HOLIDAY PERIOD - CLICK FOR DETAILS

Regards

Brenda Hong

Client Services Co-ordinator, Environmental
Sydney

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Environmental Division
Sydney
Work Order Reference
ES1838930

Telephone : +61-2-8784 8555

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From: Peachey, James [mailto:james.peachey@aecom.com]
Sent: Thursday, 20 December 2018 11:22 AM
To: Brenda Hong <Brenda.Hong@alsglobal.com>
Subject: RE: Additional analysis request, our ref: 60588844

Hi Brenda

We'd like to request the following additional analysis:

Soils analysis- PFAS TOPA and ASLP using reagent water

1	ES1835147-080	AHEQ_SS04_0.1
2	ES1835146-023	ELN_MW10_0.4-0.5
3	ES1835147-042	EWHEQ_SS02_0.1
4	ES1835147-037	LP_SS07_0.2
5	ES1835147-019	RWW_SS02_0.2

S1086 - 1091

Water analysis for PFAS TOPA

6	ES1835646-054	AHEQ_MW06_181122
7	ES1835646-043	AFD_MW36_181124
8	ES1836405-025	ESL_MW18_181127
9	ES1835646-004	EWHEQ_MW05_181123
10	ES1836405-001	LPI_MW07_181125
11	ES1835147-061	RWW_MW07_20181118

LC116-118
LC116-118
LC5-6
LC116-118
LC5-6
LC105

Soil analysis- PFAS (EP231-X)

12	ES1835147-077	AHEQ_SS06_0.2
13	ES1835147-074	AHEQ_SS07_0.1
14	ES1835147-079	AHEQ_SS05_0.2
15	ES1835147-041	EWHEQ_SS01_0.2
16	ES1835147-044	EWHEQ_SS03_0.2
17	ES1835147-053	EWHEQ_SS08_0.1
18	ES1835147-036	LP_SS07_0.1

S1086 - 1091

ES1835146 - L3
S1075 - 1081

ES1835646 - LC116-118
*4, 43, 54

ES1836405 - LC5-6
*1, 25

ES1835147 - LC105
*61

ES1835147-032	LP_SS05_0.1
ES1835147-029	LP_SS03_0.2

5086 - 6091, [redacted]

ES1835147-084 is incorrectly named- it should be AP_SS01_0.2 (COC is hard to read). Please could you correct.

Andrew Epps has hopefully passed on the information that we would like all samples associated with this project (our ref 60588844) kept for longer storage (until at end of May). This affects the following work orders:

- ES1833769
- ES1834518
- ES1834520
- ES1835146
- ES1835147
- ES1835646
- ES1836405

Regards

James Peachey
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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1838930**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: james.peachey@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Facsimile	: +61 07 3553 2050	Facsimile	: +61-2-8784 8500
Project	: 60588844	Page	: 1 of 3
Order number	: 60588844_1.0	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 20-Dec-2018 12:00	Issue Date	: 22-Dec-2018
Client Requested Due Date	: 04-Jan-2019	Scheduled Reporting Date	: **04-Jan-2019**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 4.1'C
Receipt Detail	:	No. of samples received / analysed	: 20 / 20

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This Work order is a Rebatch of ES1835147,ES1835146,ES1835405 & ES1835646**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.

Sample Container(s)/Preservation Non-Compliances

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

No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EN60-Dla Deionised Water Leach	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)	SOIL - EP231X (TOP) (solids) PFAS - Total Oxidisable Precursor (TOP) Assay	SOIL - EP231X (TOP) PFAS - Total Oxidisable Precursor (TOP) Assay
ES1838930-001	14-Nov-2018 00:00	AHEQ_SS04_0.1	▯	▯		▯	▯
ES1838930-002	15-Nov-2018 00:00	ELN_MW10_0.4-0.5	▯	▯		▯	▯
ES1838930-003	19-Nov-2018 00:00	EWHEQ_SS02_0.1	▯	▯		▯	▯
ES1838930-004	17-Nov-2018 00:00	LP_SS07_0.2	▯	▯		▯	▯
ES1838930-005	14-Nov-2018 00:00	RWW_SS02_0.2	▯	▯		▯	▯
ES1838930-012	14-Nov-2018 00:00	AHEQ_SS06_0.2	▯		▯		
ES1838930-013	14-Nov-2018 00:00	AHEQ_SS07_0.1	▯		▯		
ES1838930-014	14-Nov-2018 00:00	AHEQ_SS05_0.2	▯		▯		
ES1838930-015	19-Nov-2018 00:00	EWHEQ_SS01_0.2	▯		▯		
ES1838930-016	19-Nov-2018 00:00	EWHEQ_SS03_0.2	▯		▯		
ES1838930-017	19-Nov-2018 00:00	EWHEQ_SS08_0.1	▯		▯		
ES1838930-018	17-Nov-2018 00:00	LP_SS07_0.1	▯		▯		
ES1838930-019	17-Nov-2018 00:00	LP_SS05_0.1	▯		▯		
ES1838930-020	16-Nov-2018 00:00	LP_SS03_0.2	▯		▯		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP231X (TOP) PFAS - Total Oxidisable Precursor (TOP) Assay
ES1838930-006	22-Nov-2018 00:00	AHEW_MW06_181122	▯
ES1838930-007	24-Nov-2018 00:00	AFD_MW36_181124	▯
ES1838930-008	27-Nov-2018 00:00	ESL_MW18_181127	▯
ES1838930-009	23-Nov-2018 00:00	EWHEQ_MW05_181123	▯
ES1838930-010	25-Nov-2018 00:00	LPI_MW07_181125	▯
ES1838930-011	18-Nov-2018 00:00	RWW_MW07_20181118	▯

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL** Evaluation: = Holding time breach ; = Within holding time.

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA055: Moisture Content							
AHEQ_SS04_0.1	HDPE Soil Jar	----	28-Nov-2018	20-Dec-2018		----	----
AHEQ_SS05_0.2	HDPE Soil Jar	----	28-Nov-2018	20-Dec-2018		----	----
AHEQ_SS06_0.2	HDPE Soil Jar	----	28-Nov-2018	20-Dec-2018		----	----
AHEQ_SS07_0.1	HDPE Soil Jar	----	28-Nov-2018	20-Dec-2018		----	----
ELN_MW10_0.4-0.5	HDPE Soil Jar	----	29-Nov-2018	20-Dec-2018		----	----
EWHEQ_SS01_0.2	HDPE Soil Jar	----	03-Dec-2018	20-Dec-2018		----	----
EWHEQ_SS02_0.1	HDPE Soil Jar	----	03-Dec-2018	20-Dec-2018		----	----
EWHEQ_SS03_0.2	HDPE Soil Jar	----	03-Dec-2018	20-Dec-2018		----	----
EWHEQ_SS08_0.1	HDPE Soil Jar	----	03-Dec-2018	20-Dec-2018		----	----
LP_SS03_0.2	HDPE Soil Jar	----	30-Nov-2018	20-Dec-2018		----	----
LP_SS05_0.1	HDPE Soil Jar	----	01-Dec-2018	20-Dec-2018		----	----
LP_SS07_0.1	HDPE Soil Jar	----	01-Dec-2018	20-Dec-2018		----	----
LP_SS07_0.2	HDPE Soil Jar	----	01-Dec-2018	20-Dec-2018		----	----
RWW_SS02_0.2	HDPE Soil Jar	----	28-Nov-2018	20-Dec-2018		----	----

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1838930**	Page	: 1 of 15
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 20-Dec-2018 12:00
Order number	: 60588844_1.0	Date Analysis Commenced	: 24-Dec-2018
C-O-C number	: ----	Issue Date	: 07-Jan-2019 15:57
Sampler	: ----		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 20		
No. of samples analysed	: 20		

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.

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.

Alex Rossi	Organic Chemist	Sydney Inorganics, Smithfield, NSW
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics 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.

Analytical Results

Sub-Matrix: ASLP LEACHATE (Matrix: WATER)				AHEQ_SS04_0.1	ELN_MW10_0.4-0.5	EWHEQ_SS02_0.1	LP_SS07_0.2	RWW_SS02_0.2
				14-Nov-2018 00:00	15-Nov-2018 00:00	19-Nov-2018 00:00	17-Nov-2018 00:00	14-Nov-2018 00:00
				ES1838930-001	ES1838930-002	ES1838930-003	ES1838930-004	ES1838930-005
				Result	Result	Result	Result	Result
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.75**	<0.02	**1.59**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**1.25**	<0.02	**0.57**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	**15.1**	<0.02	**0.62**	**0.12**	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**1.42**	<0.02	**0.12**	**0.04**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**17.2**	**0.10**	**7.25**	**7.45**	**0.02**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**1.0**	<0.1	**2.6**	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**1.46**	<0.02	**2.90**	**0.18**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**15.0**	<0.02	**9.46**	**0.66**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.14**	<0.02	**0.40**	**0.21**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.72**	<0.01	**0.26**	**0.54**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	**0.03**	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231_TOP_C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: ASLP LEACHATE (Matrix: WATER)				AHEQ_SS04_0.1	ELN_MW10_0.4-0.5	EWHEQ_SS02_0.1	LP_SS07_0.2	RWW_SS02_0.2
				14-Nov-2018 00:00	15-Nov-2018 00:00	19-Nov-2018 00:00	17-Nov-2018 00:00	14-Nov-2018 00:00
				ES1838930-001	ES1838930-002	ES1838930-003	ES1838930-004	ES1838930-005
				Result	Result	Result	Result	Result
EP231_TOP_C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	**0.39**	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231_TOP_P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**54.0**	**0.10**	**26.2**	**9.23**	**0.02**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**32.3**	**0.10**	**7.87**	**7.57**	**0.02**
Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.01	µg/L	**54.0**	**0.10**	**25.8**	**9.23**	**0.02**
^ Sum of TOP C4 - C14 as Fluorine	----	0.01	µg/L	**34.6**	**0.06**	**16.6**	**6.00**	**0.01**
EP231_TOP_S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**96.0**	**92.5**	**89.0**	**92.5**	**86.5**
13C8-PFOA	----	0.02	%	**95.5**	**95.5**	**92.5**	**92.5**	**80.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AHEQ_SS04_0.1	ELN_MW10_0.4-0.5	EWHEQ_SS02_0.1	LP_SS07_0.2	RWW_SS02_0.2
				14-Nov-2018 00:00	15-Nov-2018 00:00	19-Nov-2018 00:00	17-Nov-2018 00:00	14-Nov-2018 00:00
				ES1838930-001	ES1838930-002	ES1838930-003	ES1838930-004	ES1838930-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**4.9**	**14.2**	**6.9**	**11.0**	**14.5**
EN60: Bottle Leaching Procedure								
Final pH	----	0.1	pH Unit	**8.5**	**8.9**	**7.7**	**6.1**	**6.3**
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	**0.0182**	<0.0002	**0.0379**	**0.0004**	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	**0.0216**	<0.0002	**0.0128**	**0.0004**	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.336**	<0.0002	**0.0171**	**0.0065**	**0.0002**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	**0.0277**	<0.0002	**0.0050**	**0.0016**	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.452**	**0.0066**	**0.401**	**0.288**	**0.0008**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	**0.0005**	<0.0002	**0.0044**	**0.0128**	<0.0002
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	**0.010**	**0.004**	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0046**	<0.0002	**0.0473**	**0.0050**	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0392**	**0.0003**	**0.122**	**0.0152**	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0019**	<0.0002	**0.0052**	**0.0108**	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0167**	<0.0002	**0.0087**	**0.0187**	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	**0.0003**	**0.0006**	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	**0.0009**	**0.0003**	<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	**0.0004**	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231_TOP_C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AHEQ_SS04_0.1	ELN_MW10_0.4-0.5	EWHEQ_SS02_0.1	LP_SS07_0.2	RWW_SS02_0.2
				14-Nov-2018 00:00	15-Nov-2018 00:00	19-Nov-2018 00:00	17-Nov-2018 00:00	14-Nov-2018 00:00
				ES1838930-001	ES1838930-002	ES1838930-003	ES1838930-004	ES1838930-005
				Result	Result	Result	Result	Result
EP231_TOP_C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231_TOP_D: (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
EP231_TOP_P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.918**	**0.0069**	**0.673**	**0.365**	**0.0010**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.788**	**0.0066**	**0.418**	**0.294**	**0.0010**
Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.0002	mg/kg	**0.918**	**0.0069**	**0.668**	**0.352**	**0.0010**
Sum of TOP C4 - C14 as Fluorine	----	0.0002	mg/kg	**0.582**	**0.0045**	**0.433**	**0.237**	**0.0006**
EP231_TOP_S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**63.0**	**91.5**	**70.5**	**69.0**	**85.0**
13C8-PFOA	----	0.0002	%	**67.5**	**82.0**	**94.5**	**75.5**	**83.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				AHEQ_SS06_0.2	AHEQ_SS07_0.1	AHEQ_SS05_0.2	EWHEQ_SS01_0.2	EWHEQ_SS03_0.2
				14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00
				ES1838930-012	ES1838930-013	ES1838930-014	ES1838930-015	ES1838930-016
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**9.5**	**6.0**	**7.4**	**5.6**	**6.3**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	**0.0199**	<0.0002	**0.0006**	**0.0199**	**0.0092**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	**0.0125**	<0.0002	**0.0017**	**0.0092**	**0.0073**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0637**	**0.0004**	**0.0301**	**0.0705**	**0.0338**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	**0.0011**	<0.0002	**0.0008**	**0.0130**	**0.0019**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0111**	**0.0070**	**0.0021**	**0.175**	**0.0353**
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**	**0.003**	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	**0.0061**	**0.0005**	**0.0010**	**0.0103**	**0.0052**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0343**	**0.0007**	**0.0047**	**0.0332**	**0.0199**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0027**	**0.0005**	**0.0012**	**0.0035**	**0.0024**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0025**	**0.0014**	**0.0032**	**0.0174**	**0.0035**
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)				AHEQ_SS06_0.2	AHEQ_SS07_0.1	AHEQ_SS05_0.2	EWHEQ_SS01_0.2	EWHEQ_SS03_0.2
				14-Nov-2018 00:00	14-Nov-2018 00:00	14-Nov-2018 00:00	19-Nov-2018 00:00	19-Nov-2018 00:00
				ES1838930-012	ES1838930-013	ES1838930-014	ES1838930-015	ES1838930-016
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	**0.0008**
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	**0.0180**	**0.0079**	**0.0201**	**0.0369**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	**0.0008**	<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	**0.154**	**0.0293**	**0.0543**	**0.376**	**0.156**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0748**	**0.0074**	**0.0322**	**0.246**	**0.0691**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.140**	**0.0293**	**0.0518**	**0.353**	**0.146**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**77.5**	**65.5**	**68.0**	**63.5**	**77.5**
13C8-PFOA	----	0.0002	%	**84.5**	**72.5**	**73.0**	**71.0**	**89.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EWHEQ_SS08_0.1	LP_SS07_0.1	LP_SS05_0.1	LP_SS03_0.2	----
				19-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	16-Nov-2018 00:00	----
				ES1838930-017	ES1838930-018	ES1838930-019	ES1838930-020	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**5.5**	**3.9**	**7.8**	**8.8**	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	**0.0005**	<0.0002	**0.0002**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	**0.0002**	**0.0012**	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0081**	**0.0218**	**0.0024**	**0.0018**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	**0.0004**	**0.0049**	<0.0002	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0101**	**0.288**	**0.0364**	**0.0444**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	**0.0270**	**0.0034**	**0.0012**	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	**0.0003**	<0.0002	**0.0006**	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	**0.0003**	**0.0011**	**0.0003**	**0.0008**	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	**0.0002**	**0.0009**	<0.0002	**0.0009**	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	**0.0008**	**0.0040**	**0.0003**	**0.0015**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	**0.0002**	<0.0002	**0.0005**	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	**0.0004**	**0.0004**	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	**0.0031**	**0.0003**	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EWHEQ_SS08_0.1	LP_SS07_0.1	LP_SS05_0.1	LP_SS03_0.2	----
				19-Nov-2018 00:00	17-Nov-2018 00:00	17-Nov-2018 00:00	16-Nov-2018 00:00	----
				ES1838930-017	ES1838930-018	ES1838930-019	ES1838930-020	--------
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	**0.0005**	<0.0005	**0.0016**	**0.0019**	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0206**	**0.353**	**0.0451**	**0.0538**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0182**	**0.310**	**0.0388**	**0.0462**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0200**	**0.317**	**0.0410**	**0.0521**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**73.0**	**80.5**	**65.5**	**66.0**	----
13C8-PFOA	----	0.0002	%	**81.5**	**87.0**	**73.5**	**77.0**	----

Analytical Results

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

				AHEW_MW06_181122	AFD_MW36_181124	ESL_MW18_181127	EWHEQ_MW05_181123	LPI_MW07_181125
				22-Nov-2018 00:00	24-Nov-2018 00:00	27-Nov-2018 00:00	23-Nov-2018 00:00	25-Nov-2018 00:00
				ES1838930-006	ES1838930-007	ES1838930-008	ES1838930-009	ES1838930-010
				Result	Result	Result	Result	Result
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.02**	<0.02	**0.02**	**0.16**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	**0.19**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	**0.07**	**0.07**	**0.25**	**0.14**	**1.76**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	**0.06**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.06**	**0.06**	**0.40**	**0.25**	**1.75**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	**0.7**	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.12**	**0.65**	**0.19**	**1.93**	**0.29**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.15**	**1.08**	**0.31**	**2.47**	**1.32**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.04**	**0.18**	**0.05**	**0.64**	**0.12**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.01**	**0.05**	**0.03**	**0.08**	**0.13**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	**0.02**	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	**0.02**	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231_TOP_C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				AHEW_MW06_181122	AFD_MW36_181124	ESL_MW18_181127	EWHEQ_MW05_181123	LPI_MW07_181125
				22-Nov-2018 00:00	24-Nov-2018 00:00	27-Nov-2018 00:00	23-Nov-2018 00:00	25-Nov-2018 00:00
				ES1838930-006	ES1838930-007	ES1838930-008	ES1838930-009	ES1838930-010
				Result	Result	Result	Result	Result
EP231_TOP_C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231_TOP_P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.45**	**2.13**	**1.23**	**6.25**	**5.78**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.13**	**0.13**	**0.65**	**0.39**	**3.51**
Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.01	µg/L	**0.45**	**2.13**	**1.23**	**6.25**	**5.78**
^ **Sum of TOP C4 - C14 as Fluorine**	----	0.01	µg/L	**0.29**	**1.40**	**0.80**	**4.09**	**3.70**
EP231_TOP_S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**110**	**108**	**100**	**110**	**126**
13C8-PFOA	----	0.02	%	**107**	**110**	**106**	**106**	**113**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				RWW_MW07_20181118	----	----	----	----
				18-Nov-2018 00:00	----	----	----	----
				ES1838930-011	--------	--------	--------	--------
				Result	----	----	----	----
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	**0.07**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.14**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**0.4**	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**1.11**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**1.71**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.42**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.14**	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**0.02**	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231_TOP_C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				RWW_MW07_20181118	----	----	----	----
				18-Nov-2018 00:00	----	----	----	----
				ES1838930-011	--------	--------	--------	--------
				Result	----	----	----	----
EP231_TOP_C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231_TOP_P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**4.01**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.21**	----	----	----	----
Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.01	µg/L	**4.01**	----	----	----	----
^ **Sum of TOP C4 - C14 as Fluorine**	----	0.01	µg/L	**2.64**	----	----	----	----
EP231_TOP_S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**106**	----	----	----	----
13C8-PFOA	----	0.02	%	**110**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: ASLP LEACHATE		Recovery Limits (%)	
		Low	High
EP231_TOP_S: PFAS Surrogate			
13C4-PFOS	----	60	130
13C8-PFOA	----	60	130

Sub-Matrix: SOIL		Recovery Limits (%)	
		Low	High
EP231_TOP_S: PFAS Surrogate			
13C4-PFOS	----	60	130
13C8-PFOA	----	60	130
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
		Low	High
EP231_TOP_S: PFAS Surrogate			
13C4-PFOS	----	60	130
13C8-PFOA	----	60	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1838930**	Page	: 1 of 14
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 07 3553 2000	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 20-Dec-2018
Order number	: 60588844_1.0	Date Analysis Commenced	: 24-Dec-2018
C-O-C number	: ----	Issue Date	: 07-Jan-2019
Sampler	: ----		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 20		
No. of samples analysed	: 20		

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

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.

Alex Rossi	Organic Chemist	Sydney Inorganics, Smithfield, NSW
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics 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: 2115039)									
ES1838930-001	AHEQ_SS04_0.1	EA055: Moisture Content	----	0.1	%	4.9	4.6	6.55	0% - 20%
ES1838930-018	LP_SS07_0.1	EA055: Moisture Content	----	0.1	%	3.9	4.0	0.00	0% - 20%
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2112092)									
EB1830747-025	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	0.0008	0.0008	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2112092)									
EB1830747-025	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
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QC Lot: 2112092)									
EB1830747-025	Anonymous	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 (%)*
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QC Lot: 2112092) - continued									
EB1830747-025	Anonymous	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
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2112092)									
EB1830747-025	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
EP231_TOP_P: PFAS Sums (QC Lot: 2112092)									
EB1830747-025	Anonymous	EP231X: Sum of PFAS	----	0.0002	mg/kg	0.0008	0.0008	0.00	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0008	0.0008	0.00	No Limit
		EP231X: Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.0002	mg/kg	0.0008	0.0008	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2111258)									
ES1838218-060	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0003	0.0003	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0003	0.0003	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0098	0.0100	2.46	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0008	0.0008	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.182	0.162	11.4	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0121	0.0120	0.00	0% - 20%
ES1838218-073	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	<0.0002	<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

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: 2111258)									
ES1838218-060	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0017	0.0014	21.8	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0029	0.0027	7.13	0% - 50%
		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	0.0007	0.0006	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
ES1838218-073	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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2111258)									
ES1838218-060	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0027	0.0027	0.00	0% - 50%
		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
ES1838218-073	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

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: 2111258) - continued									
ES1838218-073	Anonymous	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: 2111258)									
ES1838218-060	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
ES1838218-073	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

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 (%)
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2111294)									
ES1837745-009	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	40.6	42.6	4.66	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	2.30	2.43	5.50	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	2.29	2.03	12.0	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	10.9	9.54	13.5	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.79	0.78	1.27	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.10	<0.10	0.00	No Limit
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2119211)									
ES1838930-001	AHEQ_SS04_0.1	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	17.2	17.6	1.72	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.75	0.69	8.33	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.25	1.09	13.7	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	15.1	13.9	8.31	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	1.42	1.31	8.08	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 (%)*
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2119211) - continued									
ES1838930-001	AHEQ_SS04_0.1	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2111294)									
ES1837745-009	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	10.2	10.4	1.85	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	25.1	27.2	8.21	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	58.1	50.8	13.2	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	18.4	16.7	9.58	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	2.01	1.94	3.54	0% - 20%
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	0.87	0.83	4.70	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	0.20	0.19	5.13	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	0.13	0.11	16.7	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	0.14	0.14	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	17.0	14.4	16.7	0% - 20%
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2119211)									
ES1838930-001	AHEQ_SS04_0.1	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.72	0.70	2.38	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	1.46	1.26	14.2	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	15.0	13.6	9.60	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.14	0.13	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	1.0	0.9	0.00	No Limit
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QC Lot: 2111294)									
ES1837745-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.25	<0.25	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.25	<0.25	0.00	No Limit
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QC Lot: 2119211)									

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 (%)*
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QC Lot: 2119211) - continued									
ES1838930-001	AHEQ_SS04_0.1	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2111294)									
ES1837745-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.10	<0.10	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.10	<0.10	0.00	No Limit
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2119211)									
ES1838930-001	AHEQ_SS04_0.1	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231_TOP_P: PFAS Sums (QC Lot: 2111294)									
ES1837745-009	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	189	180	4.84	0% - 20%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	51.5	52.1	1.24	0% - 20%
		EP231X: Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.01	µg/L	189	180	4.84	0% - 20%
EP231_TOP_P: PFAS Sums (QC Lot: 2119211)									
ES1838930-001	AHEQ_SS04_0.1	EP231X: Sum of PFAS	----	0.01	µg/L	54.0	51.2	5.44	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 (%)*
EP231_TOP_P: PFAS Sums (QC Lot: 2119211) - continued									
ES1838930-001	AHEQ_SS04_0.1	EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	32.3	31.5	2.51	0% - 20%
		EP231X: Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.01	µg/L	54.0	51.2	5.44	0% - 20%

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QCLot: 2112092)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.0025 mg/kg	60.4	50	150
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.0025 mg/kg	93.6	50	150
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QCLot: 2112092)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0025 mg/kg	110	50	150
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QCLot: 2112092)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2112092)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00012 mg/kg	0.00	0	200
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----

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
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2112092) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231_TOP_P: PFAS Sums (QCLot: 2112092)								
EP231X: Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
EP231X: Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2111258)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.6	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2111258)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	86.3	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.4	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	98.1	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2111258)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.5	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.5	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.5	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	55	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2111258)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	114	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	100	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.2	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
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QCLot: 2111294)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	1 µg/L	96.1	50	150
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	1 µg/L	76.8	50	150
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids (QCLot: 2119211)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	1 µg/L	81.3	50	150
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	1 µg/L	90.0	50	150
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QCLot: 2111294)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	1 µg/L	91.2	50	150
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QCLot: 2119211)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----

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
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids (QCLot: 2119211) - continued								
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	1 µg/L	114	50	150
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QCLot: 2111294)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231_TOP_C: Perfluoroalkyl Sulfonamides (QCLot: 2119211)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2111294)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.05 µg/L	0.00	0	200
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2119211)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.05 µg/L	0.00	0	200

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
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2119211) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231_TOP_P: PFAS Sums (QCLot: 2111294)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.01	µg/L	<0.01	----	----	----	----
EP231_TOP_P: PFAS Sums (QCLot: 2119211)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of TOP C4 - C14 Carboxylates and C4 - C8 Sulfonates	----	0.01	µg/L	<0.01	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	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: 2111258)							
ES1838218-073	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	63.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	69.2	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	72.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	76.4	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	85.6	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	93.6	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2111258)							
ES1838218-073	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	66.1	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	84.4	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	71.2	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	77.6	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	77.6	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	71.2	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	68.0	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: 2111258) - continued							
ES1838218-073	Anonymous	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	71.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	65.2	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	71.0	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2111258)							
ES1838218-073	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	65.6	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	79.8	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	74.0	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	80.6	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	82.7	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	79.6	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	69.6	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2111258)							
ES1838218-073	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	94.4	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	84.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	95.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	66.4	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1838930**	Page	: 1 of 11
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR JAMES PEACHEY	Telephone	: +61 2 8784 8555
Project	: 60588844	Date Samples Received	: 20-Dec-2018
Site	: ----	Issue Date	: 07-Jan-2019
Sampler	: ----	No. of samples received	: 20
Order number	: 60588844_1.0	No. of samples analysed	: 20

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
HDPE Soil Jar AHEQ_SS04_0.1, RWW_SS02_0.2, AHEQ_SS06_0.2, AHEQ_SS07_0.1, AHEQ_SS05_0.2	----	----	----	27-Dec-2018	28-Nov-2018	**29**
HDPE Soil Jar ELN_MW10_0.4-0.5	----	----	----	27-Dec-2018	29-Nov-2018	**28**
HDPE Soil Jar LP_SS03_0.2	----	----	----	27-Dec-2018	30-Nov-2018	**27**
HDPE Soil Jar LP_SS07_0.2, LP_SS07_0.1, LP_SS05_0.1	----	----	----	27-Dec-2018	01-Dec-2018	**26**
HDPE Soil Jar EWHEQ_SS02_0.1, EWHEQ_SS01_0.2, EWHEQ_SS03_0.2, EWHEQ_SS08_0.1	----	----	----	27-Dec-2018	03-Dec-2018	**24**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) AHEQ_SS04_0.1, RWW_SS02_0.2, AHEQ_SS06_0.2, AHEQ_SS07_0.1, AHEQ_SS05_0.2	**14-Nov-2018**	**----**	----	----	**27-Dec-2018**	28-Nov-2018	×
HDPE Soil Jar (EA055) ELN_MW10_0.4-0.5	**15-Nov-2018**	**----**	----	----	**27-Dec-2018**	29-Nov-2018	×
HDPE Soil Jar (EA055) LP_SS03_0.2	**16-Nov-2018**	**----**	----	----	**27-Dec-2018**	30-Nov-2018	×
HDPE Soil Jar (EA055) LP_SS07_0.2, LP_SS07_0.1, LP_SS05_0.1	**17-Nov-2018**	**----**	----	----	**27-Dec-2018**	01-Dec-2018	×
HDPE Soil Jar (EA055)							

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) - Continued							
EWHEQ_SS02_0.1, EWHEQ_SS01_0.2, EWHEQ_SS03_0.2, EWHEQ_SS08_0.1	**19-Nov-2018**	**----**	----	----	**27-Dec-2018**	03-Dec-2018	✘
EN60: Bottle Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla)							
AHEQ_SS04_0.1, RWW_SS02_0.2	**14-Nov-2018**	**28-Dec-2018**	13-May-2019	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla)							
ELN_MW10_0.4-0.5	**15-Nov-2018**	**28-Dec-2018**	14-May-2019	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla)							
LP_SS07_0.2	**17-Nov-2018**	**28-Dec-2018**	16-May-2019	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla)							
EWHEQ_SS02_0.1	**19-Nov-2018**	**28-Dec-2018**	18-May-2019	✓	**----**	----	----
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X (TOP))							
AHEQ_SS04_0.1, RWW_SS02_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
ELN_MW10_0.4-0.5	**15-Nov-2018**	**24-Dec-2018**	14-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
LP_SS07_0.2	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
EWHEQ_SS02_0.1	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X (TOP))							
AHEQ_SS04_0.1, RWW_SS02_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
ELN_MW10_0.4-0.5	**15-Nov-2018**	**24-Dec-2018**	14-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
LP_SS07_0.2	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
EWHEQ_SS02_0.1	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
EP231_TOP_C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X (TOP))							
AHEQ_SS04_0.1, RWW_SS02_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
ELN_MW10_0.4-0.5	**15-Nov-2018**	**24-Dec-2018**	14-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
LP_SS07_0.2	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP))							
EWHEQ_SS02_0.1	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓

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
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X (TOP)) AHEQ_SS04_0.1,	RWW_SS02_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP)) ELN_MW10_0.4-0.5		**15-Nov-2018**	**24-Dec-2018**	14-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP)) LP_SS07_0.2		**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP)) EWHEQ_SS02_0.1		**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
EP231_TOP_P: PFAS Sums								
HDPE Soil Jar (EP231X (TOP)) AHEQ_SS04_0.1,	RWW_SS02_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP)) ELN_MW10_0.4-0.5		**15-Nov-2018**	**24-Dec-2018**	14-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP)) LP_SS07_0.2		**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
HDPE Soil Jar (EP231X (TOP)) EWHEQ_SS02_0.1		**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**28-Dec-2018**	02-Feb-2019	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X) AHEQ_SS06_0.2, AHEQ_SS05_0.2	AHEQ_SS07_0.1,	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS03_0.2		**16-Nov-2018**	**24-Dec-2018**	15-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS07_0.1,	LP_SS05_0.1	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) EWHEQ_SS01_0.2, EWHEQ_SS08_0.1	EWHEQ_SS03_0.2,	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X) AHEQ_SS06_0.2, AHEQ_SS05_0.2	AHEQ_SS07_0.1,	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS03_0.2		**16-Nov-2018**	**24-Dec-2018**	15-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS07_0.1,	LP_SS05_0.1	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) EWHEQ_SS01_0.2, EWHEQ_SS08_0.1	EWHEQ_SS03_0.2,	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓

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) AHEQ_SS06_0.2, AHEQ_SS07_0.1, AHEQ_SS05_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS03_0.2	**16-Nov-2018**	**24-Dec-2018**	15-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS07_0.1, LP_SS05_0.1	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) EWHEQ_SS01_0.2, EWHEQ_SS03_0.2, EWHEQ_SS08_0.1	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) AHEQ_SS06_0.2, AHEQ_SS07_0.1, AHEQ_SS05_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS03_0.2	**16-Nov-2018**	**24-Dec-2018**	15-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS07_0.1, LP_SS05_0.1	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) EWHEQ_SS01_0.2, EWHEQ_SS03_0.2, EWHEQ_SS08_0.1	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) AHEQ_SS06_0.2, AHEQ_SS07_0.1, AHEQ_SS05_0.2	**14-Nov-2018**	**24-Dec-2018**	13-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS03_0.2	**16-Nov-2018**	**24-Dec-2018**	15-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) LP_SS07_0.1, LP_SS05_0.1	**17-Nov-2018**	**24-Dec-2018**	16-May-2019	✓	**03-Jan-2019**	02-Feb-2019	✓
HDPE Soil Jar (EP231X) EWHEQ_SS01_0.2, EWHEQ_SS03_0.2, EWHEQ_SS08_0.1	**19-Nov-2018**	**24-Dec-2018**	18-May-2019	✓	**03-Jan-2019**	02-Feb-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

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
EP231_TOP_A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X (TOP)) RWW_MW07_20181118	**18-Nov-2018**	**27-Dec-2018**	17-May-2019	✓	**27-Dec-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEW_MW06_181122	**22-Nov-2018**	**27-Dec-2018**	21-May-2019	✓	**27-Dec-2018**	21-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) EWHEQ_MW05_181123	**23-Nov-2018**	**27-Dec-2018**	22-May-2019	✓	**27-Dec-2018**	22-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AFD_MW36_181124	**24-Nov-2018**	**27-Dec-2018**	23-May-2019	✓	**27-Dec-2018**	23-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) LPI_MW07_181125	**25-Nov-2018**	**27-Dec-2018**	24-May-2019	✓	**27-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) ESL_MW18_181127	**27-Nov-2018**	**27-Dec-2018**	26-May-2019	✓	**27-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEQ_SS04_0.1, EWHEQ_SS02_0.1, RWW_SS02_0.2, ELN_MW10_0.4-0.5, LP_SS07_0.2,	**28-Dec-2018**	**03-Jan-2019**	26-Jun-2019	✓	**03-Jan-2019**	26-Jun-2019	✓
EP231_TOP_B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X (TOP)) RWW_MW07_20181118	**18-Nov-2018**	**27-Dec-2018**	17-May-2019	✓	**27-Dec-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEW_MW06_181122	**22-Nov-2018**	**27-Dec-2018**	21-May-2019	✓	**27-Dec-2018**	21-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) EWHEQ_MW05_181123	**23-Nov-2018**	**27-Dec-2018**	22-May-2019	✓	**27-Dec-2018**	22-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AFD_MW36_181124	**24-Nov-2018**	**27-Dec-2018**	23-May-2019	✓	**27-Dec-2018**	23-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) LPI_MW07_181125	**25-Nov-2018**	**27-Dec-2018**	24-May-2019	✓	**27-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) ESL_MW18_181127	**27-Nov-2018**	**27-Dec-2018**	26-May-2019	✓	**27-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEQ_SS04_0.1, EWHEQ_SS02_0.1, RWW_SS02_0.2, ELN_MW10_0.4-0.5, LP_SS07_0.2,	**28-Dec-2018**	**03-Jan-2019**	26-Jun-2019	✓	**03-Jan-2019**	26-Jun-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
EP231_TOP_C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X (TOP)) RWW_MW07_20181118	**18-Nov-2018**	**27-Dec-2018**	17-May-2019	✓	**27-Dec-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEW_MW06_181122	**22-Nov-2018**	**27-Dec-2018**	21-May-2019	✓	**27-Dec-2018**	21-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) EWHEQ_MW05_181123	**23-Nov-2018**	**27-Dec-2018**	22-May-2019	✓	**27-Dec-2018**	22-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AFD_MW36_181124	**24-Nov-2018**	**27-Dec-2018**	23-May-2019	✓	**27-Dec-2018**	23-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) LPI_MW07_181125	**25-Nov-2018**	**27-Dec-2018**	24-May-2019	✓	**27-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) ESL_MW18_181127	**27-Nov-2018**	**27-Dec-2018**	26-May-2019	✓	**27-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEQ_SS04_0.1, EWHEQ_SS02_0.1, RWW_SS02_0.2, ELN_MW10_0.4-0.5, LP_SS07_0.2,	**28-Dec-2018**	**03-Jan-2019**	26-Jun-2019	✓	**03-Jan-2019**	26-Jun-2019	✓
EP231_TOP_D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X (TOP)) RWW_MW07_20181118	**18-Nov-2018**	**27-Dec-2018**	17-May-2019	✓	**27-Dec-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEW_MW06_181122	**22-Nov-2018**	**27-Dec-2018**	21-May-2019	✓	**27-Dec-2018**	21-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) EWHEQ_MW05_181123	**23-Nov-2018**	**27-Dec-2018**	22-May-2019	✓	**27-Dec-2018**	22-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AFD_MW36_181124	**24-Nov-2018**	**27-Dec-2018**	23-May-2019	✓	**27-Dec-2018**	23-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) LPI_MW07_181125	**25-Nov-2018**	**27-Dec-2018**	24-May-2019	✓	**27-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) ESL_MW18_181127	**27-Nov-2018**	**27-Dec-2018**	26-May-2019	✓	**27-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEQ_SS04_0.1, EWHEQ_SS02_0.1, RWW_SS02_0.2, ELN_MW10_0.4-0.5, LP_SS07_0.2,	**28-Dec-2018**	**03-Jan-2019**	26-Jun-2019	✓	**03-Jan-2019**	26-Jun-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
EP231_TOP_P: PFAS Sums							
HDPE (no PTFE) (EP231X (TOP)) RWW_MW07_20181118	**18-Nov-2018**	**27-Dec-2018**	17-May-2019	✓	**27-Dec-2018**	17-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEW_MW06_181122	**22-Nov-2018**	**27-Dec-2018**	21-May-2019	✓	**27-Dec-2018**	21-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) EWHEQ_MW05_181123	**23-Nov-2018**	**27-Dec-2018**	22-May-2019	✓	**27-Dec-2018**	22-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AFD_MW36_181124	**24-Nov-2018**	**27-Dec-2018**	23-May-2019	✓	**27-Dec-2018**	23-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) LPI_MW07_181125	**25-Nov-2018**	**27-Dec-2018**	24-May-2019	✓	**27-Dec-2018**	24-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) ESL_MW18_181127	**27-Nov-2018**	**27-Dec-2018**	26-May-2019	✓	**27-Dec-2018**	26-May-2019	✓
HDPE (no PTFE) (EP231X (TOP)) AHEQ_SS04_0.1, ELN_MW10_0.4-0.5, EWHEQ_SS02_0.1, LP_SS07_0.2, RWW_SS02_0.2	**28-Dec-2018**	**03-Jan-2019**	26-Jun-2019	✓	**03-Jan-2019**	26-Jun-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: **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	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	2	15	**13.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	2	15	**13.33**	**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
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. 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
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.
PFAS by LCMSMS after oxidation (TOP)	EP231X (TOP)	WATER	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.

Preparation Methods	Method	Matrix	Method Descriptions
Deionised Water Leach	EN60-DIa	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Total Oxidisable Precursor Digest for PFAS	* ORG70-W	SOIL	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.

Preparation Methods	Method	Matrix	Method Descriptions
Total Oxidisable Precursor 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.

AECOQG/181120
Due 27/11/18 mw

NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:	Townsville
Company Name:	AECOM Australia Pty Ltd
Address:	Level 5 - 7-13 Tomlins Street, South Townsville, QLD 4810
Contact:	Carina Jakobi (carina.jakobi@aecom.com)
Sampler:	Luke McIver (luke.mciver@aecom.com
ABN:	
Contact email:	carina.jakobi@aecom.com

Additional email(s) for reports james.peachey@aecom.com

Additional email(s) invoice: AP_CustomerService.ANZ@aecom.com

Job Reference : Project Sam 60588844

Internal use only

NMI Quote Number: Valid until:

LIMS Reference:

TURN AROUND TIME REQUESTED (Working days):

24 hrs	48 hrs	3-4	7	10	20	other (please specify)
100%	50%	25%	Standard		dioxins	
			x			

***Fast TATs are not available for all tests and MUST be agreed to prior to sample submission**

Esdat format required

NMI LRN (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	SAMPLE MATRIX (water / soil / biota)	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)														COMMENTS
				Hold	PFAS Extended Suite													
N18/032701	QC201_181105	5/Nov/18	Soil		x													
N18/032702	QC202_181106	6/Nov/18	Soil		x													
N18/032703	QC203_181108	8/Nov/18	Soil		x													

NMI USE ONLY

RECEIVED
20 NOV 2018
BY: W.W 11:30

Relinquished by:	
Print Name:	
Date & Time:	/ / : hrs
Signature:	

Received at NMI laboratory by:	
Print Name:	
Date & Time:	/ / : hrs
Signature:	

PAGE No: of PAGES

If multiple pages, ensure ALL pages are stapled together

Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: CARINA JAKOBI

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: Carina.jakobi@aecom.com

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Susanne Neuman

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: Susanne.Neuman@measurement.gov.au

Telephone: 02 9449 0181

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/181120**

Total No. of Samples: **3**

LRNs	Customer Sample ID	Lab Sample Description
N18/032701	QC201_181105	SOIL 5/NOV/18
N18/032702	QC202_181106	SOIL 6/NOV/18
N18/032703	QC203_181108	SOIL 8/NOV/18

SAMPLE RECEIVED CONDITION

Date samples received:	20-NOV-2018
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60588844
Temperature of samples:	Chilled
Comments:	ALL OK
Estimated report date:	27-NOV-2018
Mode of Delivery:	Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at http://www.measurement.gov.au/Services/EnvironmentalTesting/Pages/Terms-and-Conditions.aspx

REPORT OF ANALYSIS

Report No. RN1215247

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/181120
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: 60588844
		Date Received	: 20-NOV-2018
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	: 60588844		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N18/032701	QC201_181105	SOIL 5/NOV/18
N18/032702	QC202_181106	SOIL 6/NOV/18
N18/032703	QC203_181108	SOIL 8/NOV/18

Lab Reg No.	Units	N18/032701	N18/032702	N18/032703		Method
Date Sampled		05-NOV-2018	06-NOV-2018	08-NOV-2018		
Perfluoronated Compounds						
PFBA (375-22-4)	mg/kg	<0.002	<0.002	<0.002		NR70
PFPeA (2706-90-3)	mg/kg	<0.002	<0.002	<0.002		NR70
PFHxA (307-24-4)	mg/kg	<0.001	<0.001	<0.001		NR70
PFHpA (375-85-9)	mg/kg	<0.001	<0.001	<0.001		NR70
PFOA (335-67-1)	mg/kg	<0.001	<0.001	<0.001		NR70
PFNA (375-95-1)	mg/kg	<0.001	<0.001	<0.001		NR70
PFDA (335-76-2)	mg/kg	<0.001	<0.001	<0.001		NR70
PFUdA (2058-94-8)	mg/kg	<0.002	<0.002	<0.002		NR70
PFDoA (307-55-1)	mg/kg	<0.002	<0.002	<0.002		NR70
PFTrDA (72629-94-8)	mg/kg	<0.002	<0.002	<0.002		NR70
PFTeDA (376-06-7)	mg/kg	<0.002	<0.002	<0.002		NR70
PFHxDA (67905-19-5)	mg/kg	<0.002	<0.002	<0.002		NR70
PFODA (16517-11-6)	mg/kg	<0.005	<0.005	<0.005		NR70
FOUEA (70887-84-2)	mg/kg	<0.001	<0.001	<0.001		NR70
PFBS (375-73-5)	mg/kg	<0.001	<0.001	<0.001		NR70
PFPeS (2706-91-4)	mg/kg	<0.001	<0.001	<0.001		NR70
PFHxS (355-46-4)	mg/kg	<0.001	<0.001	<0.001		NR70
PFHpS (375-92-8)	mg/kg	<0.001	<0.001	<0.001		NR70
PFOS (1763-23-1)	mg/kg	0.037	<0.002	<0.002		NR70
PFNS (68259-12-1)	mg/kg	<0.001	<0.001	<0.001		NR70
PFDS (335-77-3)	mg/kg	<0.001	<0.001	<0.001		NR70
PFOSA (754-91-6)	mg/kg	<0.001	<0.001	<0.001		NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002	<0.002	<0.002		NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002	<0.002	<0.002		NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002	<0.002	<0.002		NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002	<0.002	<0.002		NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005	<0.005	<0.005		NR70

REPORT OF ANALYSIS

Lab Reg No.		N18/032701	N18/032702	N18/032703		
Date Sampled		05-NOV-2018	06-NOV-2018	08-NOV-2018		
	Units					Method
Perfluoronated Compounds						
N-EtFOSE (1691-99-2)	mg/kg	<0.005	<0.005	<0.005		NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001	<0.001	<0.001		NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001	<0.001	<0.001		NR70
8:2 FTS (39108-34-4)	mg/kg	<0.001	<0.001	<0.001		NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002	<0.002	<0.002		NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002	<0.002	<0.002		NR70
PFBA (Surrogate Recovery)	%	115	101	103		NR70
PFPeA (Surrogate Recovery)	%	108	97	91		NR70
PFHxA (Surrogate Recovery)	%	111	103	95		NR70
PFHpA (Surrogate Recovery)	%	115	100	93		NR70
PFOA (Surrogate Recovery)	%	110	106	101		NR70
PFNA (Surrogate Recovery)	%	99	87	92		NR70
PFDA (Surrogate Recovery)	%	121	89	99		NR70
PFUdA (Surrogate Recovery)	%	126	97	108		NR70
PFDoA (Surrogate Recovery)	%	115	91	99		NR70
PFTeDA (Surrogate Recovery)	%	124	96	110		NR70
PFHxDA (Surrogate Recovery)	%	119	117	98		NR70
FOUEA (Surrogate Recovery)	%	60	1	35		NR70
PFBS (Surrogate Recovery)	%	101	95	92		NR70
PFHxS (Surrogate Recovery)	%	90	91	90		NR70
PFOS (Surrogate Recovery)	%	131	114	114		NR70
PFOSA (Surrogate Recovery)	%	87	85	88		NR70
N-MeFOSA (Surrogate Recovery)	%	90	106	80		NR70
N-EtFOSA (Surrogate Recovery)	%	99	98	88		NR70
N-MeFOSAA (Surrogate Recovery)	%	91	50	75		NR70
N-EtFOSAA (Surrogate Recovery)	%	97	56	86		NR70
N-MeFOSE (Surrogate Recovery)	%	95	87	76		NR70
N-EtFOSE (Surrogate Recovery)	%	92	93	74		NR70
4:2 FTS (Surrogate Recovery)	%	76	52	64		NR70
6:2 FTS (Surrogate Recovery)	%	75	55	68		NR70
8:2 FTS (Surrogate Recovery)	%	83	50	77		NR70
8:2 diPAP (Surrogate Recovery)	%	107	36	61		NR70
Dates						
Date extracted		22-NOV-2018	22-NOV-2018	22-NOV-2018		
Date analysed		22-NOV-2018	22-NOV-2018	22-NOV-2018		

N18/032701
To

REPORT OF ANALYSIS

N18/032703
PFOS is quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.
Selected PFAS surrogate recoveries are biased due to matrix effects.

Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

27-NOV-2018

Lab Reg No.		N18/032701	N18/032702	N18/032703		
Date Sampled		05-NOV-2018	06-NOV-2018	08-NOV-2018		
	Units					Method
Trace Elements						
Total Solids	%	98.7	99.7	98.3		NT2_49

Pankaj Barai, Analyst
Inorganics - NSW
Accreditation No. 198

27-NOV-2018

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) tested.

This Report supersedes reports: *RN1215039* *RN1215244*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/181120 **Sample Matrix:** solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	<0.002	NA	NA	NA	136	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	101	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	105	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	102	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	102	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	104	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	113	NA
PFUdA (2058-94-8)	NR70	0.002	<0.002	NA	NA	NA	98	NA
PFDoA (307-55-1)	NR70	0.002	<0.002	NA	NA	NA	110	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	111	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	92	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	103	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	107	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	-	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	104	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	103	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	102	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	113	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	111	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	98	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	104	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	96	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	98	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	97	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	97	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	92	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	84	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	106	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	110	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	98	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	123	NA
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	NA	NA	NA	144	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	107	NA

Results expressed in percentage (%) or mg/kg wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **27/11/2018**

AECOQG/181126
Due 3/12/18
IM

NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:	Townsville	Internal use only	
Company Name:	AECOM Australia Pty Ltd	NMI Quote Number:	Valid until:
Address:	Level 5 - 7-13 Tomlins Street, South Townsville, QLD 4810	LIMS Reference:	
Contact:	Carina Jakobi (carina.jakobi@aecom.com)	Additional email(s) for reports	james.peachey@aecom.com
Sampler:	Luke McIver (luke.mciver@aecom.com)		
ABN:		Additional email(s) invoice: AP_CustomerService.ANZ@aecom.com	
Contact email:	carina.jakobi@aecom.com		

Job Reference : Project Sam 60588844

TURN AROUND TIME REQUESTED (Working days):

24 hrs	48 hrs	3-4	7	10	20	other (please specify)
100%	50%	25%	Standard		dioxins	
			x			

*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission

Esdat format required

NMI LRN (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	SAMPLE MATRIX (water / soil / biota)	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)														COMMENTS
				Hold	PFAS Extended Suite													
N18/033252	QC204_20181112	12/Nov/18	Soil		x													
N18/033253	QC205_20181115	15/Nov/18	Soil		x													
N18/033254	QC206_20181116	16/Nov/18	Soil		x													
N18/033255	QC207_20181117	17/Nov/18	Soil		x													
N18/033256	QC208_20181117	17/Nov/18	Soil		x													
N18/033257	QC209_20181117	18/Nov/18	Soil		x													
N18/033258	QC210_20181118	18/Nov/18	Soil		x													
NMI USE ONLY																		

RECEIVED
26 NOV 2018
BY: AO 15:00 C

Relinquished by:		Received at NMI laboratory by:	
Print Name:		Print Name:	PAGE No: of PAGES
Date & Time:	/ / : hrs	Date & Time:	/ / : hrs

ES1835147

Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: JAMES PEACHEY

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: james.peachey@aecom.com

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Susanne Neuman

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: Susanne.Neuman@measurement.gov.au

Telephone: 02 9449 0181

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/181126**

Total No. of Samples: **7**

LRNs	Customer Sample ID	Lab Sample Description
N18/033252	QC204_20181112	SOIL 12/NOV/18
N18/033253	QC205_20181115	SOIL 15/NOV/18
N18/033254	QC206_20181116	SOIL 16/NOV/18
N18/033255	QC207_20181117	SOIL 17/NOV/18
N18/033256	QC208_20181117	SOIL 17/NOV/18
N18/033257	QC209_20181118	SOIL 18/NOV/18
N18/033258	QC210_20181118	SOIL 18/NOV/18

SAMPLE RECEIVED CONDITION

Date samples received:	26-NOV-2018
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	SAM60588844
Temperature of samples:	Chilled
Comments:	ALL OK
Estimated report date:	3-DEC-2018
Mode of Delivery:	Australia Post

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at http://www.measurement.gov.au/Services/EnvironmentalTesting/Pages/Terms-and-Conditions.aspx

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/181126
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: SAM60588844
		Date Received	: 26-NOV-2018
Attention	: JAMES PEACHEY	**Sampled By**	: CLIENT
Project Name	: SAM 60588844		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N18/033252	QC204_20181112	SOIL 12/NOV/18
N18/033253	QC205_20181115	SOIL 15/NOV/18
N18/033254	QC206_20181116	SOIL 16/NOV/18
N18/033255	QC207_20181117	SOIL 17/NOV/18

Lab Reg No.		N18/033252	N18/033253	N18/033254	N18/033255	
Date Sampled		12-NOV-2018	15-NOV-2018	16-NOV-2018	17-NOV-2018	
	Units					Method
Perfluoronated Compounds						
PFBA (375-22-4)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFPeA (2706-90-3)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFHxA (307-24-4)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFHpA (375-85-9)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFOA (335-67-1)	mg/kg	<0.001	<0.001	<0.001	0.0010	NR70
PFNA (375-95-1)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFDA (335-76-2)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFUdA (2058-94-8)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFDoA (307-55-1)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFTrDA (72629-94-8)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFTeDA (376-06-7)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFHxDA (67905-19-5)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFODA (16517-11-6)	mg/kg	<0.005	<0.005	<0.005	<0.005	NR70
FOUEA (70887-84-2)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFBS (375-73-5)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFPeS (2706-91-4)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFHxS (355-46-4)	mg/kg	<0.001	<0.001	<0.001	0.0019	NR70
PFHpS (375-92-8)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFOS (1763-23-1)	mg/kg	<0.002	<0.002	<0.002	0.046	NR70
PFNS (68259-12-1)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFDS (335-77-3)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
PFOSA (754-91-6)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70

REPORT OF ANALYSIS

Lab Reg No.		N18/033252	N18/033253	N18/033254	N18/033255	
Date Sampled		12-NOV-2018	15-NOV-2018	16-NOV-2018	17-NOV-2018	
	Units					Method
Perfluoronated Compounds						
N-MeFOSE (24448-09-7)	mg/kg	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005	<0.005	<0.005	<0.005	NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
8:2 FTS (39108-34-4)	mg/kg	<0.001	<0.001	<0.001	<0.001	NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002	<0.002	<0.002	<0.002	NR70
PFBA (Surrogate Recovery)	%	109	113	108	107	NR70
PFPeA (Surrogate Recovery)	%	109	111	106	112	NR70
PFHxA (Surrogate Recovery)	%	108	103	100	102	NR70
PFHpA (Surrogate Recovery)	%	110	115	100	102	NR70
PFOA (Surrogate Recovery)	%	112	114	102	106	NR70
PFNA (Surrogate Recovery)	%	106	94	97	109	NR70
PFDA (Surrogate Recovery)	%	111	98	96	120	NR70
PFUdA (Surrogate Recovery)	%	110	103	115	125	NR70
PFDoA (Surrogate Recovery)	%	109	100	101	108	NR70
PFTeDA (Surrogate Recovery)	%	106	99	118	114	NR70
PFHxDA (Surrogate Recovery)	%	131	125	100	104	NR70
FOUEA (Surrogate Recovery)	%	73	75	54	64	NR70
PFBS (Surrogate Recovery)	%	113	114	100	101	NR70
PFHxS (Surrogate Recovery)	%	115	114	100	98	NR70
PFOS (Surrogate Recovery)	%	118	119	106	120	NR70
PFOSA (Surrogate Recovery)	%	96	97	83	108	NR70
N-MeFOSA (Surrogate Recovery)	%	112	111	93	99	NR70
N-EtFOSA (Surrogate Recovery)	%	109	117	87	92	NR70
N-MeFOSAA (Surrogate Recovery)	%	110	100	90	116	NR70
N-EtFOSAA (Surrogate Recovery)	%	116	93	100	120	NR70
N-MeFOSE (Surrogate Recovery)	%	97	109	82	74	NR70
N-EtFOSE (Surrogate Recovery)	%	70	86	90	69	NR70
4:2 FTS (Surrogate Recovery)	%	93	101	82	80	NR70
6:2 FTS (Surrogate Recovery)	%	97	111	91	86	NR70
8:2 FTS (Surrogate Recovery)	%	46	89	91	47	NR70
8:2 diPAP (Surrogate Recovery)	%	131	95	94	116	NR70
Dates						
Date extracted		29-NOV-2018	29-NOV-2018	29-NOV-2018	29-NOV-2018	
Date analysed		29-NOV-2018	29-NOV-2018	29-NOV-2018	29-NOV-2018	

N18/033252

REPORT OF ANALYSIS

to
N18/033258:
PFOS is quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

03-DEC-2018

Lab Reg No.		N18/033252	N18/033253	N18/033254	N18/033255	
Date Sampled		12-NOV-2018	15-NOV-2018	16-NOV-2018	17-NOV-2018	
	Units					Method
Trace Elements						
Total Solids	%	85.0	85.7	93.8	91.8	NT2_49

Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

03-DEC-2018

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/181126
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: SAM60588844
		Date Received	: 26-NOV-2018
Attention	: JAMES PEACHEY	**Sampled By**	: CLIENT
Project Name	: SAM 60588844		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N18/033256	QC208_20181117	SOIL 17/NOV/18
N18/033257	QC209_20181118	SOIL 18/NOV/18
N18/033258	QC210_20181118	SOIL 18/NOV/18

Lab Reg No.		N18/033256	N18/033257	N18/033258		
Date Sampled		17-NOV-2018	18-NOV-2018	18-NOV-2018		
	Units					Method
Perfluoronated Compounds						
PFBA (375-22-4)	mg/kg	<0.002	<0.002	<0.002		NR70
PFPeA (2706-90-3)	mg/kg	<0.002	<0.002	<0.002		NR70
PFHxA (307-24-4)	mg/kg	<0.001	<0.001	<0.001		NR70
PFHpA (375-85-9)	mg/kg	<0.001	<0.001	<0.001		NR70
PFOA (335-67-1)	mg/kg	<0.001	<0.001	<0.001		NR70
PFNA (375-95-1)	mg/kg	<0.001	<0.001	<0.001		NR70
PFDA (335-76-2)	mg/kg	<0.001	<0.001	<0.001		NR70
PFUdA (2058-94-8)	mg/kg	<0.002	<0.002	<0.002		NR70
PFDoA (307-55-1)	mg/kg	<0.002	<0.002	<0.002		NR70
PFTrDA (72629-94-8)	mg/kg	<0.002	<0.002	<0.002		NR70
PFTeDA (376-06-7)	mg/kg	<0.002	<0.002	<0.002		NR70
PFHxDA (67905-19-5)	mg/kg	<0.002	<0.002	<0.002		NR70
PFODA (16517-11-6)	mg/kg	<0.005	<0.005	<0.005		NR70
FOUEA (70887-84-2)	mg/kg	<0.001	<0.001	<0.001		NR70
PFBS (375-73-5)	mg/kg	<0.001	<0.001	<0.001		NR70
PFPeS (2706-91-4)	mg/kg	<0.001	<0.001	<0.001		NR70
PFHxS (355-46-4)	mg/kg	<0.001	<0.001	<0.001		NR70
PFHpS (375-92-8)	mg/kg	<0.001	<0.001	<0.001		NR70
PFOS (1763-23-1)	mg/kg	<0.002	<0.002	<0.002		NR70
PFNS (68259-12-1)	mg/kg	<0.001	<0.001	<0.001		NR70
PFDS (335-77-3)	mg/kg	<0.001	<0.001	<0.001		NR70
PFOSA (754-91-6)	mg/kg	<0.001	<0.001	<0.001		NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002	<0.002	<0.002		NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002	<0.002	<0.002		NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002	<0.002	<0.002		NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002	<0.002	<0.002		NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005	<0.005	<0.005		NR70

REPORT OF ANALYSIS

Lab Reg No.		N18/033256	N18/033257	N18/033258		
Date Sampled		17-NOV-2018	18-NOV-2018	18-NOV-2018		
	Units					Method
Perfluoronated Compounds						
N-EtFOSE (1691-99-2)	mg/kg	<0.005	<0.005	<0.005		NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001	<0.001	<0.001		NR70
6:2 FTS (27619-97-2)	mg/kg	<0.001	<0.001	<0.001		NR70
8:2 FTS (39108-34-4)	mg/kg	<0.001	<0.001	<0.001		NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002	<0.002	<0.002		NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002	<0.002	<0.002		NR70
PFBA (Surrogate Recovery)	%	116	102	121		NR70
PFPeA (Surrogate Recovery)	%	119	100	123		NR70
PFHxA (Surrogate Recovery)	%	122	90	114		NR70
PFHpA (Surrogate Recovery)	%	116	93	118		NR70
PFOA (Surrogate Recovery)	%	115	99	117		NR70
PFNA (Surrogate Recovery)	%	120	95	124		NR70
PFDA (Surrogate Recovery)	%	122	102	132		NR70
PFUdA (Surrogate Recovery)	%	123	112	134		NR70
PFDoA (Surrogate Recovery)	%	104	109	128		NR70
PFTeDA (Surrogate Recovery)	%	121	112	130		NR70
PFHxDA (Surrogate Recovery)	%	134	122	140		NR70
FOUEA (Surrogate Recovery)	%	84	64	99		NR70
PFBS (Surrogate Recovery)	%	113	102	113		NR70
PFHxS (Surrogate Recovery)	%	118	99	112		NR70
PFOS (Surrogate Recovery)	%	101	103	107		NR70
PFOSA (Surrogate Recovery)	%	105	111	119		NR70
N-MeFOSA (Surrogate Recovery)	%	108	97	118		NR70
N-EtFOSA (Surrogate Recovery)	%	110	114	134		NR70
N-MeFOSAA (Surrogate Recovery)	%	121	122	145		NR70
N-EtFOSAA (Surrogate Recovery)	%	115	114	136		NR70
N-MeFOSE (Surrogate Recovery)	%	135	108	117		NR70
N-EtFOSE (Surrogate Recovery)	%	112	76	88		NR70
4:2 FTS (Surrogate Recovery)	%	114	70	113		NR70
6:2 FTS (Surrogate Recovery)	%	116	79	122		NR70
8:2 FTS (Surrogate Recovery)	%	118	99	69		NR70
8:2 diPAP (Surrogate Recovery)	%	104	117	120		NR70
Dates						
Date extracted		29-NOV-2018	29-NOV-2018	29-NOV-2018		
Date analysed		29-NOV-2018	29-NOV-2018	29-NOV-2018		

REPORT OF ANALYSIS

Lab Reg No.		N18/033256	N18/033257	N18/033258		
Date Sampled		17-NOV-2018	18-NOV-2018	18-NOV-2018		
	Units					Method

Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

03-DEC-2018

Lab Reg No.		N18/033256	N18/033257	N18/033258		
Date Sampled		17-NOV-2018	18-NOV-2018	18-NOV-2018		
	Units					Method
Trace Elements						
Total Solids	%	78.6	95.4	61.6		NT2_49

Richard Tea, Analyst
Inorganics - NSW
Accreditation No. 198

03-DEC-2018

All results are expressed on a dry weight basis.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) tested.

REPORT OF ANALYSIS

This Report supersedes reports: *RN1215874*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO03/181126 **Sample Matrix:** solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
				N18/033258	N18/033258			N18/033258
PFBA (375-22-4)	NR70	0.002	<0.002	<0.002	<0.002	-	120	100
PFPeA (2706-90-3)	NR70	0.002	<0.002	<0.002	<0.002	-	80	100
PFHxA (307-24-4)	NR70	0.001	<0.001	<0.001	<0.001	-	112	102
PFHpA (375-85-9)	NR70	0.001	<0.001	<0.001	<0.001	-	130	100
PFOA (335-67-1)	NR70	0.001	<0.001	<0.001	<0.001	-	104	109
PFNA (375-95-1)	NR70	0.001	<0.001	<0.001	<0.001	-	98	103
PFDA (335-76-2)	NR70	0.001	<0.001	<0.001	<0.001	-	112	117
PFUdA (2058-94-8)	NR70	0.002	<0.002	<0.002	<0.002	-	88	107
PFDoA (307-55-1)	NR70	0.002	<0.002	<0.002	<0.002	-	103	101
PFTrDA (72629-94-8)	NR70	0.002	<0.002	<0.002	<0.002	-	117	110
PFTeDA (376-06-7)	NR70	0.002	<0.002	<0.002	<0.002	-	112	107
PFHxDA (67905-19-5)	NR70	0.002	<0.002	<0.002	<0.002	-	105	101
PFODA (16517-11-6)	NR70	0.005	<0.005	<0.005	<0.005	-	98	98
FOUEA (70887-84-2)	NR70	0.001	<0.001	<0.001	<0.001	-	108	108
PFBS (375-73-5)	NR70	0.001	<0.001	<0.001	<0.001	-	109	101
PFPeS (2706-91-4)	NR70	0.001	<0.001	<0.001	<0.001	-	110	97
PFHxS (355-46-4)	NR70	0.001	<0.001	<0.001	<0.001	-	101	102
PFHpS (375-92-8)	NR70	0.001	<0.001	<0.001	<0.001	-	102	103
PFOS (1763-23-1)	NR70	0.002	<0.002	<0.002	<0.002	-	140	104
PFNS (68259-12-1)	NR70	0.001	<0.001	<0.001	<0.001	-	104	105
PFDS (335-77-3)	NR70	0.001	<0.001	<0.001	<0.001	-	96	103
PFOSA (754-91-6)	NR70	0.001	<0.001	<0.001	<0.001	-	114	108
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	<0.002	<0.002	-	108	117
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	<0.002	<0.002	-	107	119
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	<0.002	<0.002	-	101	95
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	<0.002	<0.002	-	110	104
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	<0.005	<0.005	-	88	97
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	<0.005	<0.005	-	86	122
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	<0.001	<0.001	-	105	106
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	<0.001	<0.001	-	107	109
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	<0.001	<0.001	-	120	105
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	<0.002	<0.002	-	114	123
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	<0.002	<0.002	-	100	100

Results expressed in percentage (%) or mg/kg wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **3/12/2018**

NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:	Townsville
Company Name:	AECOM Australia Pty Ltd
Address:	Level 5 - 7-13 Tomlins Street, South Townsville, QLD 4810
Contact:	Carina Jakobi (carina.jakobi@aecom.com)
Sampler:	Luke McIver (luke.mciver@aecom.com
ABN:	
Contact email:	carina.jakobi@aecom.com

Additional email(s) for reports james.peachey@aecom.com

Additional email(s) invoice: AP_CustomerService.ANZ@aecom.com

Internal use only

NMI Quote Number: Valid until:

LIMS Reference:

TURN AROUND TIME REQUESTED (Working days):

24 hrs	48 hrs	3-4	7	10	20	other (please specify)
100%	50%	25%	Standard		dioxins	
			X			

*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission

Esdat format required

AECOM 6/181204

Due 11/12/18 mr. 13/12/18 SN ✓

Job Reference : Project Sam 60588844

NMI LRN (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	SAMPLE MATRIX (water / soil / biota)	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)													COMMENTS
				Hold	PFAS Extended Suite supertrace analysis (lo v level)	PFAS Extended Suite											
	QC223_181125	25/11/2018	Water		x												not received
	QC224_181126	26/11/2018	Water		x												" SN 4/12/18
	QC225_181127	27/11/2018	Water		x												
N18/034276	QC220_181123	23/11/2018	Water		x												
N18/034277	QC221_181124	24/11/2018	Water		x												
N18/034278	QC215_181121	21/11/2018	Soil			X											
N18/034279	QC214_20181123	23/11/2018	Water		x												
N18/034280	QC217_181121	21/11/2018	Water		x												
N18/034281	QC216_181121	21/11/2018	Water		x												
N18/034282	QC218_181122	22/11/2018	Water		x												
N18/034283	QC219_181123	21/11/2018	Water		x												
N18/034284	QC222_181124	24/11/2018	Water		x												
N18/034285	QC213_181122_671		Water														

RECEIVED 04 DEC 2018 BY: SN 1135

Relinquished by:
Print Name:
Date & Time: / / : hrs
Signature:

Received at NMI laboratory by:
Print Name:
Date & Time: / / : hrs
Signature:

PAGE No: of PAGES

If multiple pages, ensure ALL pages are stapled together

Neuman, Susanne

From: Jakobi, Carina <Carina.Jakobi@aecom.com>
Sent: Tuesday, 4 December 2018 1:26 PM
To: Neuman, Susanne; Peachey, James; McIver, Luke
Cc: Lattari, Tony; Mueller, Gabrielle
Subject: RE: Scan Data from FX-D7AA80 [SEC=UNCLASSIFIED]

Hi Susanne,

Please proceed with the analysis for PFAS extended suite (low level) for the samples you have received.

Kind regards

Carina Jakobi
Principal Contaminated Land Consultant
D +61 7 4720 1635 M +61 428 644 967
mailto:Carina.Jakobi@aecom.com

AECOM
Level 5, 7-13 Tomlins Street, South Townsville, QLD 4810 PO Box 5423 Townsville QLD 4810 T +61 7 4729 5500 F +61 7 4729 5599 http://www.aecom.com

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-----Original Message-----
From: Neuman, Susanne [mailto:Susanne.Neuman@measurement.gov.au]
Sent: Tuesday, 4 December 2018 11:47 AM
To: Jakobi, Carina; Peachey, James; McIver, Luke
Cc: Lattari, Tony
Subject: FW: Scan Data from FX-D7AA80 [SEC=UNCLASSIFIED]

Hello Carina,

We received your coc but there are discrepancies.
One sample is not on the coc and three samples we did not receive.
Please see attached for details - if you could advise how to proceed with the extra sample.

Regards
Susanne

Susanne Neuman
Laboratory Services Unit Manager
P: +61 2 94490181 | M: +61 404 150984
susanne.neuman@measurement.gov.au

National Measurement Institute
105 Delhi Road
North Ryde NSW 2113
Australia
ABN 74 599 608 295

National Measurement Institute | www.measurement.gov.au

ANZ

FQM - Generic Chain of Custody Form

Q4AN(EV)-007-FM1

James.Peachey@aecom.com

CONSULTANT: Aecom	ADDRESS / OFFICE:	SAMPLER: Luke Myles	Destination Laboratory
PROJECT MANAGER (PM): James Peachey	SITE: Project SAM	MOBILE: 0434370048 PHONE	NMI
PROJECT NUMBER & TASK COI 60588844	P.O. NO.: AP_customerservice_A...	EMAIL REPORT TO: corina.jakobi@aecom.com	
RESULTS REQUIRED (Date):	QUOTE NO.: ANZ@aecom.co-	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
Standard TAT
ESDAT format required.

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

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	HOLD
	QC217-181121	W	21/11/18		1P	1	X
	QC218-181122	W	22/11/18		1P	1	X
	QC219-181123	W	23/11/18		1P	1	X
	QC216-181121	W	21/11/18		1P	1	X
	QC218-181122	W	22/11/18		1P	1	X
	QC222-181124	W	22/11/18		1P	1	X
	QC221-181124	W	24/11/18		1P	1	X
	QC214-181119	W	18/11/18		1P	1	X
	QC220-181123	W	25/11/18		1P	1	X
	QC215-181121	S	21/11/18		1P	1	X

RECEIVED
27 NOV 2018
BY: Am 8:30 C

RELINQUISHED BY		RECEIVED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Luke Myles	Date: 25/11/18	Name:	Date:	Name:	Date:	Con' Note No:
Of: Aecom	Time: 10:30	Of:	Time:	Of:	Time:	Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag. **Soil Container Codes:** Jar = Unpreserved glass jar

COC Page 1 of 1

105 Delhi rd, north ryde, nsw, 2113

Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: CARINA JAKOBI

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: Carina.jakobi@aecom.com

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Susanne Neuman

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: Susanne.Neuman@measurement.gov.au

Telephone: 02 9449 0181

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/181204**

Total No. of Samples: **10**

LRNs	Customer Sample ID	Lab Sample Description
N18/034276	QC220_181123	WATER 23/11/2018
N18/034277	QC221_181124	WATER 24/11/2018
N18/034278	QC215_181121	SOIL 21/11/2018
N18/034279	QC214_181123	WATER 23/11/2018
N18/034280	QC217_181121	WATER 21/11/2018
N18/034281	QC216_181121	WATER 21/11/2018
N18/034282	QC218_181122	WATER 22/11/2018
N18/034283	QC219_181123	WATER 21/11/2018
N18/034284	QC222_181124	WATER 24/11/2018
N18/034285	QC213_181122_GH	WATER 22/11/2018

SAMPLE RECEIVED CONDITION

Date samples received:	4-DEC-2018
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	SAM60588844
Temperature of samples:	Chilled
Comments:	ALL OK
Estimated report date:	13-DEC-2018
Mode of Delivery:	Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at http://www.measurement.gov.au/Services/EnvironmentalTesting/Pages/Terms-and-Conditions.aspx

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/181204
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: SAM60588844
		Date Received	: 04-DEC-2018
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	: SAM 60588844		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N18/034278	QC215_181121	SOIL 21/11/2018

Lab Reg No.		N18/034278				
Date Sampled		21-NOV-2018				
	Units					Method
Perfluoronated Compounds						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	<0.002				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

Lab Reg No.		N18/034278				
Date Sampled		21-NOV-2018				
	Units					Method
Perfluoronated Compounds						
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	101				NR70
PFPeA (Surrogate Recovery)	%	135				NR70
PFHxA (Surrogate Recovery)	%	96				NR70
PFHpA (Surrogate Recovery)	%	98				NR70
PFOA (Surrogate Recovery)	%	108				NR70
PFNA (Surrogate Recovery)	%	100				NR70
PFDA (Surrogate Recovery)	%	106				NR70
PFUdA (Surrogate Recovery)	%	110				NR70
PFDoA (Surrogate Recovery)	%	105				NR70
PFTeDA (Surrogate Recovery)	%	114				NR70
PFHxDA (Surrogate Recovery)	%	110				NR70
FOUEA (Surrogate Recovery)	%	54				NR70
PFBS (Surrogate Recovery)	%	94				NR70
PFHxS (Surrogate Recovery)	%	107				NR70
PFOS (Surrogate Recovery)	%	110				NR70
PFOSA (Surrogate Recovery)	%	106				NR70
N-MeFOSA (Surrogate Recovery)	%	104				NR70
N-EtFOSA (Surrogate Recovery)	%	107				NR70
N-MeFOSAA (Surrogate Recovery)	%	97				NR70
N-EtFOSAA (Surrogate Recovery)	%	102				NR70
N-MeFOSE (Surrogate Recovery)	%	97				NR70
N-EtFOSE (Surrogate Recovery)	%	105				NR70
4:2 FTS (Surrogate Recovery)	%	60				NR70
6:2 FTS (Surrogate Recovery)	%	77				NR70
8:2 FTS (Surrogate Recovery)	%	75				NR70
Dates						
Date extracted		13-DEC-2018				
Date analysed		13-DEC-2018				

N18/034278
PFOS is quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.
Selected PFAS surrogate recoveries are biased due to matrix effects.

REPORT OF ANALYSIS

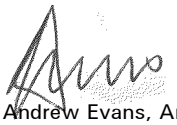
Lab Reg No.		N18/034278				
Date Sampled		21-NOV-2018				
	Units					Method



Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

13-DEC-2018

Lab Reg No.		N18/034278				
Date Sampled		21-NOV-2018				
	Units					Method
Trace Elements						
Total Solids	%	86.0				NT2_49



Andrew Evans, Analyst
Inorganics - NSW
Accreditation No. 198

13-DEC-2018

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Report No. RN1216965

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/181204
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: SAM60588844
		Date Received	: 04-DEC-2018
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	: SAM 60588844		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N18/034276	QC220_181123	WATER 23/11/2018
N18/034277	QC221_181124	WATER 24/11/2018
N18/034279	QC214_181123	WATER 23/11/2018
N18/034280	QC217_181121	WATER 21/11/2018

Lab Reg No.			N18/034276	N18/034277	N18/034279	N18/034280	
Date Sampled			23-NOV-2018	24-NOV-2018	23-NOV-2018	21-NOV-2018	
		Units					Method
Perfluoronated Compounds							
PFBA (375-22-4)		ug/L	<0.005	<0.005	<0.01	0.0082	NR70
PFPeA (2706-90-3)		ug/L	<0.002	<0.002	0.024	<0.002	NR70
PFHxA (307-24-4)		ug/L	0.0027	0.0011	0.033	<0.001	NR70
PFHpA (375-85-9)		ug/L	<0.001	<0.001	0.0045	<0.001	NR70
PFOA (335-67-1)		ug/L	<0.001	<0.001	0.0050	<0.001	NR70
PFNA (375-95-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDA (335-76-2)		ug/L	<0.001	<0.001	0.0010	<0.001	NR70
PFUdA (2058-94-8)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDoA (307-55-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFTrDA (72629-94-8)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFTeDA (376-06-7)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFHxDA (67905-19-5)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFODA (16517-11-6)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
FOUEA (70887-84-2)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFBS (375-73-5)		ug/L	0.0061	<0.001	<0.01	<0.001	NR70
PFPeS (2706-91-4)		ug/L	0.0048	<0.001	<0.001	<0.001	NR70
PFHxS (355-46-4)		ug/L	0.037	0.0033	0.0062	<0.001	NR70
PFHpS (375-92-8)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFOS (1763-23-1)		ug/L	0.0083	0.0050	0.020	<0.002	NR70
PFNS (68259-12-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDS (335-77-3)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFOSA (754-91-6)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70

REPORT OF ANALYSIS

Lab Reg No.			N18/034276	N18/034277	N18/034279	N18/034280	
Date Sampled			23-NOV-2018	24-NOV-2018	23-NOV-2018	21-NOV-2018	
		Units					Method
Perfluoronated Compounds							
N-MeFOSE (24448-09-7)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSE (1691-99-2)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
4:2 FTS (757124-72-4)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
6:2 FTS (27619-97-2)		ug/L	0.081	0.018	0.95	<0.001	NR70
8:2 FTS (39108-34-4)		ug/L	<0.001	<0.001	0.028	<0.001	NR70
10:2 FTS (120226-60-0)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
8:2 diPAP (678-41-1)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFBA (Surrogate Recovery)		%	115	119	162	125	NR70
PFPeA (Surrogate Recovery)		%	127	119	115	116	NR70
PFHxA (Surrogate Recovery)		%	113	110	106	112	NR70
PFHpA (Surrogate Recovery)		%	113	113	112	118	NR70
PFOA (Surrogate Recovery)		%	123	123	121	113	NR70
PFNA (Surrogate Recovery)		%	113	121	105	112	NR70
PFDA (Surrogate Recovery)		%	119	113	135	109	NR70
PFUdA (Surrogate Recovery)		%	118	118	149	101	NR70
PFDoA (Surrogate Recovery)		%	108	115	100	93	NR70
PFTeDA (Surrogate Recovery)		%	117	114	99	98	NR70
PFHxDA (Surrogate Recovery)		%	123	123	97	112	NR70
FOUEA (Surrogate Recovery)		%	54	82	95	29	NR70
PFBS (Surrogate Recovery)		%	115	113	159	119	NR70
PFHxS (Surrogate Recovery)		%	114	117	175	120	NR70
PFOS (Surrogate Recovery)		%	122	130	129	124	NR70
PFOSA (Surrogate Recovery)		%	61	79	104	42	NR70
N-MeFOSAA (Surrogate Recovery)		%	127	128	150	87	NR70
N-EtFOSAA (Surrogate Recovery)		%	118	112	112	96	NR70
N-MeFOSE (Surrogate Recovery)		%	34	31	116	25	NR70
N-EtFOSE (Surrogate Recovery)		%	48	40	135	29	NR70
4:2 FTS (Surrogate Recovery)		%	95	86	131	98	NR70
6:2 FTS (Surrogate Recovery)		%	112	91	87	88	NR70
8:2 FTS (Surrogate Recovery)		%	79	107	82	69	NR70
8:2 diPAP (Surrogate Recovery)		%	94	105	96	85	NR70
Dates							
Date extracted			10-DEC-2018	10-DEC-2018	10-DEC-2018	10-DEC-2018	
Date analysed			11-DEC-2018	11-DEC-2018	11-DEC-2018	11-DEC-2018	

N18/034276
to
N18/034285

and N18/034670 to N18/034672:
PFOS is quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.
Selected PFAS surrogate recoveries are biased due to matrix effects.
LORs raised for selected analytes due to low surrogate recoveries.



Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

13-DEC-2018

REPORT OF ANALYSIS

Report No. RN1216965

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/181204
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: SAM60588844
		Date Received	: 04-DEC-2018
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	: SAM 60588844		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N18/034281	QC216_181121	WATER 21/11/2018
N18/034282	QC218_181122	WATER 22/11/2018
N18/034283	QC219_181123	WATER 21/11/2018
N18/034284	QC222_181124	WATER 24/11/2018

Lab Reg No.			N18/034281	N18/034282	N18/034283	N18/034284	
Date Sampled			21-NOV-2018	22-NOV-2018	21-NOV-2018	24-NOV-2018	
		Units					Method
Perfluoronated Compounds							
PFBA (375-22-4)		ug/L	0.0062	0.024	<0.005	<0.005	NR70
PFPeA (2706-90-3)		ug/L	<0.002	0.066	<0.002	<0.002	NR70
PFHxA (307-24-4)		ug/L	<0.001	0.044	0.0018	<0.001	NR70
PFHpA (375-85-9)		ug/L	<0.001	0.020	<0.001	<0.001	NR70
PFOA (335-67-1)		ug/L	<0.001	0.0039	<0.001	<0.001	NR70
PFNA (375-95-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDA (335-76-2)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFUdA (2058-94-8)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDoA (307-55-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFTrDA (72629-94-8)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFTeDA (376-06-7)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFHxDA (67905-19-5)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFODA (16517-11-6)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
FOUEA (70887-84-2)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFBS (375-73-5)		ug/L	<0.001	0.0055	<0.001	<0.001	NR70
PFPeS (2706-91-4)		ug/L	<0.001	0.0049	<0.001	<0.001	NR70
PFHxS (355-46-4)		ug/L	<0.001	0.042	0.0051	0.0046	NR70
PFHpS (375-92-8)		ug/L	<0.001	0.0013	<0.001	<0.001	NR70
PFOS (1763-23-1)		ug/L	<0.002	0.053	0.0030	0.0035	NR70
PFNS (68259-12-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDS (335-77-3)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFOSA (754-91-6)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70

REPORT OF ANALYSIS

Lab Reg No.			N18/034281	N18/034282	N18/034283	N18/034284	
Date Sampled			21-NOV-2018	22-NOV-2018	21-NOV-2018	24-NOV-2018	
		Units					Method
Perfluoronated Compounds							
N-MeFOSE (24448-09-7)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSE (1691-99-2)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
4:2 FTS (757124-72-4)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
6:2 FTS (27619-97-2)		ug/L	<0.001	0.0089	0.0062	<0.001	NR70
8:2 FTS (39108-34-4)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
10:2 FTS (120226-60-0)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
8:2 diPAP (678-41-1)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFBA (Surrogate Recovery)		%	117	117	116	117	NR70
PFPeA (Surrogate Recovery)		%	110	113	135	108	NR70
PFHxA (Surrogate Recovery)		%	124	126	116	120	NR70
PFHpA (Surrogate Recovery)		%	118	124	120	122	NR70
PFOA (Surrogate Recovery)		%	120	137	123	123	NR70
PFNA (Surrogate Recovery)		%	107	119	131	106	NR70
PFDA (Surrogate Recovery)		%	100	115	124	99	NR70
PFUdA (Surrogate Recovery)		%	99	110	133	100	NR70
PFDoA (Surrogate Recovery)		%	90	104	117	93	NR70
PFTeDA (Surrogate Recovery)		%	90	100	113	99	NR70
PFHxDA (Surrogate Recovery)		%	111	133	130	121	NR70
FOUEA (Surrogate Recovery)		%	29	59	49	93	NR70
PFBS (Surrogate Recovery)		%	119	131	119	123	NR70
PFHxS (Surrogate Recovery)		%	122	131	122	121	NR70
PFOS (Surrogate Recovery)		%	111	119	128	125	NR70
PFOSA (Surrogate Recovery)		%	32	47	65	72	NR70
N-MeFOSAA (Surrogate Recovery)		%	79	118	146	88	NR70
N-EtFOSAA (Surrogate Recovery)		%	90	118	130	96	NR70
N-MeFOSE (Surrogate Recovery)		%	25	30	35	38	NR70
N-EtFOSE (Surrogate Recovery)		%	26	21	45	56	NR70
4:2 FTS (Surrogate Recovery)		%	97	108	106	83	NR70
6:2 FTS (Surrogate Recovery)		%	85	107	99	99	NR70
8:2 FTS (Surrogate Recovery)		%	72	91	86	80	NR70
8:2 diPAP (Surrogate Recovery)		%	85	120	103	94	NR70
Dates							
Date extracted			10-DEC-2018	10-DEC-2018	10-DEC-2018	10-DEC-2018	
Date analysed			11-DEC-2018	11-DEC-2018	11-DEC-2018	11-DEC-2018	

REPORT OF ANALYSIS

Lab Reg No.			N18/034281	N18/034282	N18/034283	N18/034284	
Date Sampled			21-NOV-2018	22-NOV-2018	21-NOV-2018	24-NOV-2018	
		Units					Method

Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

13-DEC-2018

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/181204
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: SAM60588844
		Date Received	: 04-DEC-2018
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	: SAM 60588844		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N18/034285	QC213_181122_GM	WATER 22/11/2018
N18/034670	QC223_181125	WATER 25-11-18
N18/034671	QC224_181126	WATER 26-11-18
N18/034672	QC225_181127	WATER 27-11-18

Lab Reg No.			N18/034285	N18/034670	N18/034671	N18/034672	
Date Sampled			22-NOV-2018	25-NOV-2018	26-NOV-2018	27-NOV-2018	
		Units					Method
Perfluoronated Compounds							
PFBA (375-22-4)		ug/L	<0.005	<0.005	<0.005	0.015	NR70
PFPeA (2706-90-3)		ug/L	<0.002	<0.002	<0.002	0.011	NR70
PFHxA (307-24-4)		ug/L	<0.001	<0.001	<0.001	0.0084	NR70
PFHpA (375-85-9)		ug/L	<0.001	<0.001	<0.001	0.0054	NR70
PFOA (335-67-1)		ug/L	<0.001	<0.001	<0.001	0.0048	NR70
PFNA (375-95-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDA (335-76-2)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFUdA (2058-94-8)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDoA (307-55-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFTrDA (72629-94-8)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFTeDA (376-06-7)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFHxDA (67905-19-5)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFODA (16517-11-6)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
FOUEA (70887-84-2)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFBS (375-73-5)		ug/L	<0.001	<0.001	<0.001	0.0020	NR70
PFPeS (2706-91-4)		ug/L	<0.001	<0.001	<0.001	0.0021	NR70
PFHxS (355-46-4)		ug/L	<0.001	0.0022	0.0066	0.045	NR70
PFHpS (375-92-8)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFOS (1763-23-1)		ug/L	0.0035	<0.002	0.013	0.082	NR70
PFNS (68259-12-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDS (335-77-3)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFOSA (754-91-6)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70

REPORT OF ANALYSIS

Lab Reg No.			N18/034285	N18/034670	N18/034671	N18/034672	
Date Sampled			22-NOV-2018	25-NOV-2018	26-NOV-2018	27-NOV-2018	
		Units					Method
Perfluoronated Compounds							
N-MeFOSE (24448-09-7)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSE (1691-99-2)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
4:2 FTS (757124-72-4)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
6:2 FTS (27619-97-2)		ug/L	0.19	0.051	0.065	0.0060	NR70
8:2 FTS (39108-34-4)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
10:2 FTS (120226-60-0)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
8:2 diPAP (678-41-1)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFBA (Surrogate Recovery)		%	124	122	127	127	NR70
PFPeA (Surrogate Recovery)		%	130	133	141	120	NR70
PFHxA (Surrogate Recovery)		%	118	114	118	104	NR70
PFHpA (Surrogate Recovery)		%	118	116	120	112	NR70
PFOA (Surrogate Recovery)		%	119	119	115	110	NR70
PFNA (Surrogate Recovery)		%	118	116	106	127	NR70
PFDA (Surrogate Recovery)		%	115	120	108	131	NR70
PFUdA (Surrogate Recovery)		%	105	109	102	115	NR70
PFDoA (Surrogate Recovery)		%	95	108	98	106	NR70
PFTeDA (Surrogate Recovery)		%	105	112	89	107	NR70
PFHxDA (Surrogate Recovery)		%	118	116	120	102	NR70
FOUEA (Surrogate Recovery)		%	38	83	90	68	NR70
PFBS (Surrogate Recovery)		%	119	116	123	117	NR70
PFHxS (Surrogate Recovery)		%	121	120	119	107	NR70
PFOS (Surrogate Recovery)		%	110	112	126	129	NR70
PFOSA (Surrogate Recovery)		%	42	62	68	60	NR70
N-MeFOSAA (Surrogate Recovery)		%	116	99	97	91	NR70
N-EtFOSAA (Surrogate Recovery)		%	103	113	98	105	NR70
N-MeFOSE (Surrogate Recovery)		%	25	36	44	29	NR70
N-EtFOSE (Surrogate Recovery)		%	29	32	42	22	NR70
4:2 FTS (Surrogate Recovery)		%	104	91	98	101	NR70
6:2 FTS (Surrogate Recovery)		%	133	107	125	95	NR70
8:2 FTS (Surrogate Recovery)		%	85	90	81	88	NR70
8:2 diPAP (Surrogate Recovery)		%	100	85	97	73	NR70
Dates							
Date extracted			10-DEC-2018	10-DEC-2018	10-DEC-2018	10-DEC-2018	
Date analysed			11-DEC-2018	11-DEC-2018	11-DEC-2018	11-DEC-2018	

REPORT OF ANALYSIS

Lab Reg No.			N18/034285	N18/034670	N18/034671	N18/034672	
Date Sampled			22-NOV-2018	25-NOV-2018	26-NOV-2018	27-NOV-2018	
		Units					Method



Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

13-DEC-2018

NATA
ACCREDITED FOR
TECHNICAL
COMPETENCE

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) tested.

This Report supersedes reports: *RN1216959*

Measurement Uncertainty is available upon request.

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/181204 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	<0.002	NA	NA	NA	112	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	107	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	97	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	110	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	104	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	106	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	108	NA
PFUdA (2058-94-8)	NR70	0.002	<0.002	NA	NA	NA	99	NA
PFDoA (307-55-1)	NR70	0.002	<0.002	NA	NA	NA	102	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	101	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	111	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	102	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	94	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	112	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	108	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	111	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	102	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	96	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	105	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	107	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	112	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	104	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	115	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	89	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	106	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	98	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	110	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	111	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	118	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	111	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	117	NA
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	NA	NA	NA	140	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	93	NA

Results expressed in percentage (%) or mg/kg wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **13/12/2018**

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/181204 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.005	<0.005	NA	NA	NA	100	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	91	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	90	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	91	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	87	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	84	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	82	NA
PFUdA (2058-94-8)	NR70	0.001	<0.001	NA	NA	NA	79	NA
PFDoA (307-55-1)	NR70	0.001	<0.001	NA	NA	NA	85	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	87	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	93	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	88	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	84	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	88	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	87	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	90	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	89	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	88	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	87	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	84	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	76	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	75	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	76	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	86	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	70	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	28	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	94	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	88	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	89	NA
10:2 FTS (120226-60-0)	NR70	0.001	<0.001	NA	NA	NA	79	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	92	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **12/12/2018**

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: **AECOM Australia**

ADDRESS / OFFICE: AECOM Brisbane, 540 Wickham Street, Fortitude Valley 4006, QLD

PROJECT MANAGER James Peachey

PROJECT ID: 60588844

SITE: Project Sam P.O. NO.:

RESULTS REQUIRED (**Date**): Standard TAT QUOTE NO.:

SAMPLER: Gabrielle Mueller

MOBILE: 0439 042 977

PHONE:

EMAIL REPORT TO: Carina.Jakobi@aecom.com, James.Peachey@aecom.com

EMAIL INVOICE TO: (if different to report)

ALS Laboratory Group

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Please send sample QC208_190223 to NMI Sydney for analysis - separate CoC attached

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	EP231X PFAS													
1	EMB/LP/NSA_High	S	23/02/2019		1 x P	1	X													
2	EMB/LP/NSB_High	S	23/02/2019		1 x P	1	X													
3	EMB/LP/NSC_High	S	23/02/2019		1 x P	1	X													
4	EMB/EV/NSA_High	S	23/02/2019		1 x P	1	X													
5	EMB/EV/NSB_High	S	23/02/2019		1 x P	1	X													
6	EMB/EV/NSC_High	S	23/02/2019		1 x P	1	X													
7	QC108_190223	S	23/02/2019		1 x P	1	X													
=	QC208_190223	S	23/02/2019		1 x P	1														See comments
8	PR/AND/WS/DOS_190221	S	21/02/2019		1 x P	1	X													
9	SW/BEN/UPS_190220	S	20/02/2019		1 x P	1	X													
10	SW/BEN/MID_190220	S	20/02/2019		1 x P	1	X													
11	PR/EWM/WP_190219	S	19/02/2019		1 x P	1	X													
12	PR/EWM/02_190219	S	19/02/2019		1 x P	1	X													
13	SW/BEN/DOS_190219	S	19/02/2019		1 x P	1	X													
14	PR/EWM/WP/DOS_190219	S	19/02/2019		1 x P	1	X													

Environmental Division
Brisbane
Work Order Reference
EB1904914

Telephone : + 61-7-3243 7222

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:		Name:	Date:	Con' Note No:
Of: AECOM	Time:	Of:	Time:	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS LABORATORY GROUP

MPL

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: AECOM Australia
ADDRESS / OFFICE: AECOM Brisbane, 540 Wickham Street, Fortitude Valley 4006, QLD
PROJECT MANAGER James Peachey
PROJECT ID: 60588644
SITE: Project Sam
P.O. NO.:
RESULTS REQUIRED (Date): Standard TAT
QUOTE NO.:

SAMPLER: G. MUELLER
MOBILE: 0439042977
PHONE:
EMAIL REPORT TO: Carina.Jakobi@aecom.com, James.Peachey@aecom.com
EMAIL INVOICE TO: (if different to report)

ALS Laboratory Group

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
Please send sample QC208-190223 to NMI Sydney for analysis.

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION: Type / Code	Total bottles	HOLD	HOLD
	EMB/LP/NSA - High	S	23/02/19	0742.	1 x P	1	X	
	EMB/LP/NSB - High	S		0802	1 x P	1	X	
	EMB/LP/NSC - High	S		0821	1 x P	1	X	
	EMB/EV/NSA - High	S		0840	1 x P	1	X	
	EMB/EV/NSB - High	S		0930	1 x P	1	X	
	EMB/EV/NSC - High	S	↓		1 x P	1	X	
	[redacted]							
	QC1 08-190223	S	23/02/19		1 x P		X	[redacted]
=	QC2 08-190223	S	23/02/19		1 x P		X	see comments
	[redacted]							
	PR/ANO/WS/DOS-190221	S	21-02-19				X	
	SW/BEN/UPS-190220		20-02-19				X	
	SW/BEN/MID-190220		20-02-19				X	
	PR/EWM/WP-190219		19-02-19				X	
	PR/EWM/02-190219		19-02-19				X	
	SW/BEN/DOS-190219		19-02-19				X	
	PR/EWM/WP/DOS-190219	↓	19-02-19		↓	↓	X	

RELINQUISHED BY:
Name: Gabrielle Mueller
Of: AECOM
Name:
Of:
Time:
Date: 24-2-19
Time:

RECEIVED BY
Name: DAN.B
Of: ALS
Date: 26-2-19
Time: 14-09
Name:
Of:
Date:
Time:

METHOD OF SHIPMENT
Con' Note No:
Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1904914**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: james.peachey@aecom.com	E-mail	: andrew.epps@alsglobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Facsimile	: +61 07 3553 2050	Facsimile	: +61-7-3243 7218
Project	: 60588844 1.0	Page	: 1 of 3
Order number	: 60588844 1.0	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project Sam		
Sampler	: GABRIELLE MUELLER		

Dates

Date Samples Received	: 26-Feb-2019 14:09	Issue Date	: 27-Feb-2019
Client Requested Due Date	: 06-Mar-2019	Scheduled Reporting Date	: **06-Mar-2019**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 22.7°C
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 14 / 14

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
- **Selected QC samples will be forwarded to NMI as per request. Please note, this will incur a freight forwarding fee.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

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.

EB1904914-008 : [21-Feb-2019] : PR/AND/WS/DOS_190221
EB1904914-014 : [19-Feb-2019] : PR/EWM/WP/DOS_190219

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 - EP231X (solids) PFAS - Full Suite (28 analytes)
EB1904914-001	23-Feb-2019 00:00	EMB/LP/NSA_High	▯	▯
EB1904914-002	23-Feb-2019 00:00	EMB/LP/NSB_High	▯	▯
EB1904914-003	23-Feb-2019 00:00	EMB/LP/NSC_High	▯	▯
EB1904914-004	23-Feb-2019 00:00	EMB/EV/NSA_High	▯	▯
EB1904914-005	23-Feb-2019 00:00	EMB/EV/NSB_High	▯	▯
EB1904914-006	23-Feb-2019 00:00	EMB/EV/NSC_High	▯	▯
EB1904914-007	23-Feb-2019 00:00	QC108_190223	▯	▯
EB1904914-008	21-Feb-2019 00:00	PR/AND/WS/DOS_190221	▯	▯
EB1904914-009	20-Feb-2019 00:00	SW/BEN/UPS_190220	▯	▯
EB1904914-010	20-Feb-2019 00:00	SW/BEN/MID_190220	▯	▯
EB1904914-011	19-Feb-2019 00:00	PR/EWM/WP_190219	▯	▯
EB1904914-012	19-Feb-2019 00:00	PR/EWM/02_190219	▯	▯
EB1904914-013	19-Feb-2019 00:00	SW/BEN/DOS_190219	▯	▯
EB1904914-014	19-Feb-2019 00:00	PR/EWM/WP/DOS_190219	▯	▯

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

CARINA JAKOBI

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

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1904914**	Page	: 1 of 9
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019 14:09
Order number	: 60588844 1.0	Date Analysis Commenced	: 28-Feb-2019
C-O-C number	: ----	Issue Date	: 05-Mar-2019 17:07
Sampler	: GABRIELLE MUELLER		
Site	: Project Sam		
Quote number	: EN/004/16		
No. of samples received	: 14		
No. of samples analysed	: 14		

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.

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.

Diana Mesa	2IC Organic Chemist	Brisbane Inorganics, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Santusha Pandra	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.

- EP231X: Sample 'PR/EWM/WP/DOS_190219' required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly and surrogates have not been determined.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EMB/LP/NSA_High	EMB/LP/NSB_High	EMB/LP/NSC_High	EMB/EV/NSA_High	EMB/EV/NSB_High
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904914-001	EB1904914-002	EB1904914-003	EB1904914-004	EB1904914-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**19.5**	**17.9**	**24.8**	**19.4**	**17.2**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0003**	<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)				EMB/LP/NSA_High	EMB/LP/NSB_High	EMB/LP/NSC_High	EMB/EV/NSA_High	EMB/EV/NSB_High
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904914-001	EB1904914-002	EB1904914-003	EB1904914-004	EB1904914-005
				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	**0.0003**	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	**0.0003**	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	**0.0003**	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**114**	**98.6**	**127**	**84.9**	**80.6**
13C8-PFOA	----	0.0002	%	**113**	**118**	**Not Determined**	**93.2**	**93.7**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				EMB/EV/NSC_High	QC108_190223	PR/AND/WS/DOS_190221	SW/BEN/UPS_190220	SW/BEN/MID_190220
				23-Feb-2019 00:00	23-Feb-2019 00:00	21-Feb-2019 00:00	20-Feb-2019 00:00	20-Feb-2019 00:00
				EB1904914-006	EB1904914-007	EB1904914-008	EB1904914-009	EB1904914-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**19.0**	**58.0**	**54.7**	**51.9**	**58.4**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0003**	**0.0008**	<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	**0.0019**	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	**0.0017**	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	**0.0010**	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	**0.0003**	<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	**0.0004**	<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	<0.0002	<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)				EMB/EV/NSC_High	QC108_190223	PR/AND/WS/DOS_190221	SW/BEN/UPS_190220	SW/BEN/MID_190220
				23-Feb-2019 00:00	23-Feb-2019 00:00	21-Feb-2019 00:00	20-Feb-2019 00:00	20-Feb-2019 00:00
				EB1904914-006	EB1904914-007	EB1904914-008	EB1904914-009	EB1904914-010
				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	**0.0078**	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<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	**0.0014**	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	**0.0003**	**0.0173**	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	**0.0003**	**0.0008**	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	**0.0003**	**0.0149**	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**108**	**81.0**	**92.4**	**112**	**87.3**
13C8-PFOA	----	0.0002	%	**110**	**80.9**	**97.2**	**102**	**99.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				PR/EWM/WP_190219	PR/EWM/02_190219	SW/BEN/DOS_190219	PR/EWM/WP/DOS_190219	----
				19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	----
				EB1904914-011	EB1904914-012	EB1904914-013	EB1904914-014	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**38.4**	**23.5**	**25.9**	**59.9**	**----**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	**0.0002**	<0.0002	<0.0002	<0.0010	**----**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0016**	<0.0002	<0.0002	**0.0046**	**----**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	**----**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0012**	**----**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0025	**----**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	**----**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0025	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				PR/EWM/WP_190219	PR/EWM/02_190219	SW/BEN/DOS_190219	PR/EWM/WP/DOS_190219	----
				19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	----
				EB1904914-011	EB1904914-012	EB1904914-013	EB1904914-014	--------
				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	<0.0025	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0025	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0025	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0010	----
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	<0.0010	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	**0.0023**	<0.0005	<0.0005	**0.0050**	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	**0.0028**	<0.0005	<0.0005	<0.0010	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	**0.0041**	<0.0005	<0.0005	<0.0010	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	**0.0110**	<0.0002	<0.0002	**0.0108**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	**0.0016**	<0.0002	<0.0002	**0.0046**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	**0.0069**	<0.0002	<0.0002	**0.0096**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**112**	**94.6**	**97.6**	**Not Determined**	----
13C8-PFOA	----	0.0002	%	**92.2**	**98.0**	**97.4**	**Not Determined**	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
□□ □□□□□	□□ □□ □□	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130
13C8-PFOA	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1904914**	Page	: 1 of 7
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019
Order number	: 60588844 1.0	Date Analysis Commenced	: 28-Feb-2019
C-O-C number	: ----	Issue Date	: 05-Mar-2019
Sampler	: GABRIELLE MUELLER		
Site	: Project Sam		
Quote number	: EN/004/16		
No. of samples received	: 14		
No. of samples analysed	: 14		

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

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.

Diana Mesa	2IC Organic Chemist	Brisbane Inorganics, Stafford, QLD
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Santusha Pandra	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: **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: 2209793)									
EB1904876-001	Anonymous	EA055: Moisture Content	----	0.1	%	4.4	4.6	5.91	0% - 20%
EB1904914-010	SW/BEN/MID_190220	EA055: Moisture Content	----	0.1	%	58.4	54.8	6.37	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2209183)									
EB1904914-001	EMB/LP/NSA_High	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
EB1904914-011	PR/EWM/WP_190219	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	0.0016	0.0010	49.3	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: 2209183)									
EB1904914-001	EMB/LP/NSA_High	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

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 (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2209183) - continued									
EB1904914-001	EMB/LP/NSA_High	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
EB1904914-011	PR/EWM/WP_190219	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2209183)									
EB1904914-001	EMB/LP/NSA_High	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
EB1904914-011	PR/EWM/WP_190219	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

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 (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2209183)									
EB1904914-001	EMB/LP/NSA_High	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
EB1904914-011	PR/EWM/WP_190219	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	0.0023	0.0011	67.5	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	0.0028	0.0019	36.6	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	0.0041	0.0029	34.9	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: 2209183)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	107	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	113	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	101	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	112	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	71.1	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	106	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2209183)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	122	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2209183)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.5	70	130
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	107	70	130
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.5	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	70	130
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2209183)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00116 mg/kg	117	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	128	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00119 mg/kg	107	70	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2209183) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	128	70	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**

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: 2209183)							
EB1904914-002	EMB/LP/NSB_High	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	89.2	70	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	99.6	70	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	98.4	70	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	104	70	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	81.6	70	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	90.8	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2209183)							
EB1904914-002	EMB/LP/NSB_High	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	122	70	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	104	70	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	104	70	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	104	70	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	102	70	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.0	70	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	99.2	70	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	88.4	70	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	89.6	70	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	87.6	70	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	94.4	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2209183)							
EB1904914-002	EMB/LP/NSB_High	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	89.6	70	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	83.8	70	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	97.3	70	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	93.6	70	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	95.8	70	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	119	70	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: 2209183) - continued							
EB1904914-002	EMB/LP/NSB_High	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	78.0	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2209183)							
EB1904914-002	EMB/LP/NSB_High	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	114	70	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	94.8	70	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	106	70	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	117	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1904914**	Page	: 1 of 6
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019
Site	: Project Sam	Issue Date	: 05-Mar-2019
Sampler	: GABRIELLE MUELLER	No. of samples received	: 14
Order number	: 60588844 1.0	No. of samples analysed	: 14

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
PR/EWM/WP_190219,	PR/EWM/02_190219,	**19-Feb-2019**	**----**	----	----	**28-Feb-2019**	05-Mar-2019	✓
SW/BEN/DOS_190219,	PR/EWM/WP/DOS_190219							
HDPE Soil Jar (EA055)								
SW/BEN/UPS_190220,	SW/BEN/MID_190220	**20-Feb-2019**	**----**	----	----	**28-Feb-2019**	06-Mar-2019	✓
HDPE Soil Jar (EA055)								
PR/AND/WS/DOS_190221		**21-Feb-2019**	**----**	----	----	**28-Feb-2019**	07-Mar-2019	✓
HDPE Soil Jar (EA055)								
EMB/LP/NSA_High,	EMB/LP/NSB_High,	**23-Feb-2019**	**----**	----	----	**28-Feb-2019**	09-Mar-2019	✓
EMB/LP/NSC_High,	EMB/EV/NSA_High,							
EMB/EV/NSB_High,	EMB/EV/NSC_High,							
QC108_190223								
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
PR/EWM/WP_190219,	PR/EWM/02_190219,	**19-Feb-2019**	**28-Feb-2019**	18-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
SW/BEN/DOS_190219,	PR/EWM/WP/DOS_190219							
HDPE Soil Jar (EP231X)								
SW/BEN/UPS_190220,	SW/BEN/MID_190220	**20-Feb-2019**	**28-Feb-2019**	19-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X)								
PR/AND/WS/DOS_190221		**21-Feb-2019**	**28-Feb-2019**	20-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X)								
EMB/LP/NSA_High,	EMB/LP/NSB_High,	**23-Feb-2019**	**28-Feb-2019**	22-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
EMB/LP/NSC_High,	EMB/EV/NSA_High,							
EMB/EV/NSB_High,	EMB/EV/NSC_High,							
QC108_190223								

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) PR/EWM/WP_190219, SW/BEN/DOS_190219,	PR/EWM/02_190219, PR/EWM/WP/DOS_190219	**19-Feb-2019**	**28-Feb-2019**	18-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) SW/BEN/UPS_190220,	SW/BEN/MID_190220	**20-Feb-2019**	**28-Feb-2019**	19-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) PR/AND/WS/DOS_190221		**21-Feb-2019**	**28-Feb-2019**	20-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) EMB/LP/NSA_High, EMB/LP/NSC_High, EMB/EV/NSB_High, QC108_190223	EMB/LP/NSB_High, EMB/EV/NSA_High, EMB/EV/NSC_High,	**23-Feb-2019**	**28-Feb-2019**	22-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X) PR/EWM/WP_190219, SW/BEN/DOS_190219,	PR/EWM/02_190219, PR/EWM/WP/DOS_190219	**19-Feb-2019**	**28-Feb-2019**	18-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) SW/BEN/UPS_190220,	SW/BEN/MID_190220	**20-Feb-2019**	**28-Feb-2019**	19-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) PR/AND/WS/DOS_190221		**21-Feb-2019**	**28-Feb-2019**	20-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) EMB/LP/NSA_High, EMB/LP/NSC_High, EMB/EV/NSB_High, QC108_190223	EMB/LP/NSB_High, EMB/EV/NSA_High, EMB/EV/NSC_High,	**23-Feb-2019**	**28-Feb-2019**	22-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X) PR/EWM/WP_190219, SW/BEN/DOS_190219,	PR/EWM/02_190219, PR/EWM/WP/DOS_190219	**19-Feb-2019**	**28-Feb-2019**	18-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) SW/BEN/UPS_190220,	SW/BEN/MID_190220	**20-Feb-2019**	**28-Feb-2019**	19-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) PR/AND/WS/DOS_190221		**21-Feb-2019**	**28-Feb-2019**	20-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X) EMB/LP/NSA_High, EMB/LP/NSC_High, EMB/EV/NSB_High, QC108_190223	EMB/LP/NSB_High, EMB/EV/NSA_High, EMB/EV/NSC_High,	**23-Feb-2019**	**28-Feb-2019**	22-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓

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)								
PR/EWM/WP_190219, SW/BEN/DOS_190219,	PR/EWM/02_190219, PR/EWM/WP/DOS_190219	**19-Feb-2019**	**28-Feb-2019**	18-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X)								
SW/BEN/UPS_190220,	SW/BEN/MID_190220	**20-Feb-2019**	**28-Feb-2019**	19-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X)								
PR/AND/WS/DOS_190221		**21-Feb-2019**	**28-Feb-2019**	20-Aug-2019	✓	**28-Feb-2019**	09-Apr-2019	✓
HDPE Soil Jar (EP231X)								
EMB/LP/NSA_High, EMB/LP/NSC_High, EMB/EV/NSB_High, QC108_190223	EMB/LP/NSB_High, EMB/EV/NSA_High, EMB/EV/NSC_High,	**23-Feb-2019**	**28-Feb-2019**	22-Aug-2019	✓	**28-Feb-2019**	09-Apr-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: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (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. 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
Sample Extraction for PFAS	EP231-PR	SOIL	In house

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: AECOM Australia		SAMPLER:	Gabrielle Mueller
ADDRESS / OFFICE:	AECOM Brisbane, 540 Wickham Street, Fortitude Valley 4006, QLD	MOBILE:	0439 042 977
PROJECT MANAGER (PM): Carina Jakobi	James Peachey	PHONE:	
PROJECT ID: 60588844		EMAIL REPORT TO:	Carina.Jakobi@aecom.com, James.Peachey@aecom.com
SITE: Project Sam	P.O. NO.:	EMAIL INVOICE TO: (if different to report)	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
Please send samples QC205_190223, QC206_190223 and QC207_190223 to NMI Sydney for analysis. - separate CoC attached

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Container Type / Code	Total bottles	PFAS EP231X (PFAS Full suite 28 analytes) - Supertrace
1	PR/EWM/WP_190219	W	19/02/2019		1 x P	1	X
2	PR/EWM/WP/DOS	W	19/02/2019		1 x P	1	X
3	SW/BEN/MID_190220	W	20/02/2019		1 x P	1	X
4	SW/BEN/UPS_190220	W	20/02/2019		1 x P	1	X
5	SW/BEN/DOS_190219	W	19/02/2019		1 x P	1	X
6	PR/AND/WS/DOS_190221	W	21/02/2019		1 x P	1	X
7	PR/AND/WS_190220	W	20/02/2019		1 x P	1	X
8	EMB/LP/OSA_High	W	23/02/2019		1 x P	1	X
9	EMB/LP/OSB_High	W	23/02/2019		1 x P	1	X
10	EMB/LP/OSC_High	W	23/02/2019		1 x P	1	X
11	EMB/EV/OSA_High	W	23/02/2019		1 x P	1	X
12	EMB/EV/OSB_High	W	23/02/2019		1 x P	1	X
13	EMB/EV/OSC_High	W	23/02/2019		1 x P	1	X
14	EMB/LP/OSA_Low	W	23/02/2019		1 x P	1	X
15	EMB/LP/OSB_Low	W	23/02/2019		1 x P	1	X
16	EMB/LP/OSC_Low	W	23/02/2019		1 x P	1	X
17	EMB/EV/OSA_Low	W	23/02/2019		1 x P	1	X
18	EMB/EV/OSB_Low	W	23/02/2019		1 x P	1	X
19	EMB/EV/OSC_Low	W	23/02/2019		1 x P	1	X
20	EMB/LP/NSA_High	W	23/02/2019		1 x P	1	X
21	EMB/LP/NSB_High	W	23/02/2019		1 x P	1	X
22	EMB/LP/NSC_High	W	23/02/2019		1 x P	1	X
23	EMB/EV/NSA_High	W	23/02/2019		1 x P	1	X
24	EMB/EV/NSB_High	W	23/02/2019		1 x P	1	X
25	EMB/EV/NSC_High	W	23/02/2019		1 x P	1	X
26	EMB/LP/NSA_Low	W	23/02/2019		1 x P	1	X
27	EMB/LP/NSB_Low	W	23/02/2019		1 x P	1	X
28	EMB/LP/NSC_Low	W	23/02/2019		1 x P	1	X
29	EMB/EV/NSA_Low	W	23/02/2019		1 x P	1	X
30	EMB/EV/NSB_Low	W	23/02/2019		1 x P	1	X
31	EMB/EV/NSC_Low	W	23/02/2019		1 x P	1	X
32	QC105_190223	W	23/02/2019		1 x P	1	X
=	QC205_190223	W	23/02/2019		1 x P	1	See comments
33	QC106_190223	W	23/02/2019		1 x P	1	X
=	QC206_190223	W	23/02/2019		1 x P	1	See comments
34	QC107_190223	W	23/02/2019		1 x P	1	X
=	QC207_190223	W	23/02/2019		1 x P	1	See comments

Environmental Division Brisbane
Work Order Reference
EB1904920

Telephone : + 61-7-3243 7222

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:		Name:	Date:	Con' Note No:
Of: AECOM	Time:	Of:	Time:	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS LABORATORY GROUP

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1904920**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: james.peachey@aecom.com	E-mail	: andrew.epps@alsglobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Facsimile	: +61 07 3553 2050	Facsimile	: +61-7-3243 7218
Project	: 60588844 1.0	Page	: 1 of 3
Order number	: 60588844 1.0	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project Sam		
Sampler	: GABRIELLE MUELLER		

Dates

Date Samples Received	: 26-Feb-2019 14:09	Issue Date	: 27-Feb-2019
Client Requested Due Date	: 08-Mar-2019	Scheduled Reporting Date	: **08-Mar-2019**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 24.2°C
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 34 / 34

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Selected QC samples will be forwarded to NMI as per request. Please note, this will incur a freight forwarding fee. This fee has been added to EB1904914 for all work orders in this submission.**
- 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 ± 1 week) from receipt of samples.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

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.

EB1904920-006 : [21-Feb-2019] : PR/AND/WS/DOS_190221

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
EB1904920-001	19-Feb-2019 00:00	PR/EWM/WP_190219	▯
EB1904920-002	19-Feb-2019 00:00	PR/EWM/WP/DOS	▯
EB1904920-003	20-Feb-2019 00:00	SW/BEN/MID_190220	▯
EB1904920-004	20-Feb-2019 00:00	SW/BEN/UPS_190220	▯
EB1904920-005	19-Feb-2019 00:00	SW/BEN/DOS_190219	▯
EB1904920-006	21-Feb-2019 00:00	PR/AND/WS/DOS_190221	▯
EB1904920-007	20-Feb-2019 00:00	PR/AND/WS_190220	▯
EB1904920-008	23-Feb-2019 00:00	EMB/LP/OSA_High	▯
EB1904920-009	23-Feb-2019 00:00	EMB/LP/OSB_High	▯
EB1904920-010	23-Feb-2019 00:00	EMB/LP/OSC_High	▯
EB1904920-011	23-Feb-2019 00:00	EMB/EV/OSA_High	▯
EB1904920-012	23-Feb-2019 00:00	EMB/EV/OSB_High	▯
EB1904920-013	23-Feb-2019 00:00	EMB/EV/OSC_High	▯
EB1904920-014	23-Feb-2019 00:00	EMB/LP/OSA_Low	▯
EB1904920-015	23-Feb-2019 00:00	EMB/LP/OSB_Low	▯
EB1904920-016	23-Feb-2019 00:00	EMB/LP/OSC_Low	▯
EB1904920-017	23-Feb-2019 00:00	EMB/EV/OSA_Low	▯
EB1904920-018	23-Feb-2019 00:00	EMB/EV/OSB_Low	▯
EB1904920-019	23-Feb-2019 00:00	EMB/EV/OSC_Low	▯
EB1904920-020	23-Feb-2019 00:00	EMB/LP/NSA_High	▯
EB1904920-021	23-Feb-2019 00:00	EMB/LP/NSB_High	▯
EB1904920-022	23-Feb-2019 00:00	EMB/LP/NSC_High	▯
EB1904920-023	23-Feb-2019 00:00	EMB/EV/NSA_High	▯
EB1904920-024	23-Feb-2019 00:00	EMB/EV/NSB_High	▯
EB1904920-025	23-Feb-2019 00:00	EMB/EV/NSC_High	▯
EB1904920-026	23-Feb-2019 00:00	EMB/LP/NSA_Low	▯
EB1904920-027	23-Feb-2019 00:00	EMB/LP/NSB_Low	▯
EB1904920-028	23-Feb-2019 00:00	EMB/LP/NSC_Low	▯
EB1904920-029	23-Feb-2019 00:00	EMB/EV/NSA_Low	▯
EB1904920-030	23-Feb-2019 00:00	EMB/EV/NSB_Low	▯
EB1904920-031	23-Feb-2019 00:00	EMB/EV/NSC_Low	▯
EB1904920-032	23-Feb-2019 00:00	QC105_190223	▯
EB1904920-033	23-Feb-2019 00:00	QC106_190223	▯

			WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB1904920-034	23-Feb-2019 00:00	QC107_190223	☐

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

CARINA JAKOBI

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

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1904920**	Page	: 1 of 17
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019 14:09
Order number	: 60588844 1.0	Date Analysis Commenced	: 06-Mar-2019
C-O-C number	: ----	Issue Date	: 12-Mar-2019 08:45
Sampler	: GABRIELLE MUELLER		
Site	: Project Sam		
Quote number	: EN/004/16		
No. of samples received	: 34		
No. of samples analysed	: 34		

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.

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.

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).**

Analytical Results

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

				PR/EWM/WP_190219	PR/EWM/WP/DOS	SW/BEN/MID_190220	SW/BEN/UPS_190220	SW/BEN/DOS_190219
				19-Feb-2019 00:00	19-Feb-2019 00:00	20-Feb-2019 00:00	20-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904920-001	EB1904920-002	EB1904920-003	EB1904920-004	EB1904920-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0041**	**0.0041**	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0051**	**0.0039**	**0.0006**	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0219**	**0.0186**	**0.0030**	<0.0005	**0.0011**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0037**	**0.0035**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0509**	**0.0531**	**0.0040**	**0.0010**	**0.0019**
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	**0.0132**	**0.153**	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0186**	**0.0514**	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0071**	**0.0358**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0059**	**0.0214**	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	**0.0009**	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	**0.0019**	<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)				PR/EWM/WP_190219	PR/EWM/WP/DOS	SW/BEN/MID_190220	SW/BEN/UPS_190220	SW/BEN/DOS_190219
				19-Feb-2019 00:00	19-Feb-2019 00:00	20-Feb-2019 00:00	20-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904920-001	EB1904920-002	EB1904920-003	EB1904920-004	EB1904920-005
				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	**0.269**	**0.410**	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	**0.014**	**0.016**	<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	**0.414**	**0.774**	**0.0076**	**0.0010**	**0.0030**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0728**	**0.0717**	**0.0070**	**0.0010**	**0.0030**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.405**	**0.763**	**0.0070**	**0.0010**	**0.0030**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**85.2**	**78.5**	**98.6**	**76.8**	**90.3**
13C8-PFOA	----	0.0005	%	**84.7**	**112**	**93.9**	**111**	**87.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				PR/AND/WS/DOS_190221	PR/AND/WS_190220	EMB/LP/OSA_High	EMB/LP/OSB_High	EMB/LP/OSC_High
				21-Feb-2019 00:00	20-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-006	EB1904920-007	EB1904920-008	EB1904920-009	EB1904920-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0012**	**0.0012**	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0022**	**0.0019**	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0088**	**0.0107**	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	**0.0013**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0330**	**0.0382**	<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	**0.0194**	**0.0075**	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0579**	**0.0215**	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0122**	**0.0077**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0137**	**0.0074**	<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)				PR/AND/WS/DOS_190221	PR/AND/WS_190220	EMB/LP/OSA_High	EMB/LP/OSB_High	EMB/LP/OSC_High
				21-Feb-2019 00:00	20-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-006	EB1904920-007	EB1904920-008	EB1904920-009	EB1904920-010
				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	**0.003**	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	**1.00**	**0.503**	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	**0.084**	**0.032**	<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	**1.24**	**0.632**	<0.0003	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0418**	**0.0489**	<0.0003	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**1.23**	**0.629**	<0.0003	<0.0003	<0.0003
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**64.1**	**79.3**	**83.2**	**75.6**	**81.3**
13C8-PFOA	----	0.0005	%	**73.6**	**81.0**	**80.3**	**82.9**	**91.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				EMB/EV/OSA_High	EMB/EV/OSB_High	EMB/EV/OSC_High	EMB/LP/OSA_Low	EMB/LP/OSB_Low
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-011	EB1904920-012	EB1904920-013	EB1904920-014	EB1904920-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	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	<0.0005	<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)				EMB/EV/OSA_High	EMB/EV/OSB_High	EMB/EV/OSC_High	EMB/LP/OSA_Low	EMB/LP/OSB_Low
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-011	EB1904920-012	EB1904920-013	EB1904920-014	EB1904920-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	<0.0003	<0.0003	<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	<0.0003	<0.0003
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**78.9**	**75.6**	**81.6**	**77.7**	**76.2**
13C8-PFOA	----	0.0005	%	**91.7**	**89.6**	**96.4**	**89.3**	**81.0**

Analytical Results

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

				EMB/LP/OSC_Low	EMB/EV/OSA_Low	EMB/EV/OSB_Low	EMB/EV/OSC_Low	EMB/LP/NSA_High
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-016	EB1904920-017	EB1904920-018	EB1904920-019	EB1904920-020
				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	<0.0005
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	<0.0005	<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)				EMB/LP/OSC_Low	EMB/EV/OSA_Low	EMB/EV/OSB_Low	EMB/EV/OSC_Low	EMB/LP/NSA_High
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-016	EB1904920-017	EB1904920-018	EB1904920-019	EB1904920-020
				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	<0.001
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	<0.0003
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	<0.0003	<0.0003
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**68.6**	**81.8**	**85.5**	**65.2**	**75.3**
13C8-PFOA	----	0.0005	%	**78.8**	**93.8**	**103**	**73.5**	**92.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				EMB/LP/NSB_High	EMB/LP/NSC_High	EMB/EV/NSA_High	EMB/EV/NSB_High	EMB/EV/NSC_High
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-021	EB1904920-022	EB1904920-023	EB1904920-024	EB1904920-025
				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	**0.0015**	<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	**0.0012**	<0.0003	**0.0009**	**0.0022**	**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	<0.0005	<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)				EMB/LP/NSB_High	EMB/LP/NSC_High	EMB/EV/NSA_High	EMB/EV/NSB_High	EMB/EV/NSC_High
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-021	EB1904920-022	EB1904920-023	EB1904920-024	EB1904920-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<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	**0.0012**	<0.0003	**0.0009**	**0.0037**	**0.0003**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0012**	<0.0003	**0.0009**	**0.0037**	**0.0003**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0012**	<0.0003	**0.0009**	**0.0037**	**0.0003**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**74.8**	**75.5**	**76.0**	**72.8**	**77.5**
13C8-PFOA	----	0.0005	%	**89.7**	**93.5**	**91.4**	**96.5**	**92.9**

Analytical Results

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

				EMB/LP/NSA_Low	EMB/LP/NSB_Low	EMB/LP/NSC_Low	EMB/EV/NSA_Low	EMB/EV/NSB_Low
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-026	EB1904920-027	EB1904920-028	EB1904920-029	EB1904920-030
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	**0.0018**	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	**0.0019**	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	**0.0159**	**0.0019**	**0.0007**	**0.0013**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	**0.0010**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0004**	**0.0194**	**0.0082**	**0.0014**	**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	**0.0013**	<0.0005	<0.0005	**0.0008**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	**0.0030**	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	**0.0010**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	**0.0011**	<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)				EMB/LP/NSA_Low	EMB/LP/NSB_Low	EMB/LP/NSC_Low	EMB/EV/NSA_Low	EMB/EV/NSB_Low
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00
				EB1904920-026	EB1904920-027	EB1904920-028	EB1904920-029	EB1904920-030
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<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	**0.0004**	**0.0464**	**0.0101**	**0.0021**	**0.0039**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0004**	**0.0353**	**0.0101**	**0.0021**	**0.0031**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0004**	**0.0435**	**0.0101**	**0.0021**	**0.0039**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**79.8**	**79.8**	**74.9**	**85.1**	**79.9**
13C8-PFOA	----	0.0005	%	**92.7**	**94.3**	**96.9**	**95.0**	**98.1**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				EMB/EV/NSC_Low	QC105_190223	QC106_190223	QC107_190223	----
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	----
				EB1904920-031	EB1904920-032	EB1904920-033	EB1904920-034	--------
				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	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0008**	**0.0015**	<0.0005	<0.0005	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0039**	**0.0020**	<0.0003	<0.0003	----
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	<0.002	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0007**	**0.0005**	<0.0005	<0.0005	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<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	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<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	----
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)				EMB/EV/NSC_Low	QC105_190223	QC106_190223	QC107_190223	----
				23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	23-Feb-2019 00:00	----
				EB1904920-031	EB1904920-032	EB1904920-033	EB1904920-034	--------
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	**0.0054**	**0.0040**	<0.0003	<0.0003	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0047**	**0.0035**	<0.0003	<0.0003	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0054**	**0.0040**	<0.0003	<0.0003	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**73.1**	**72.4**	**75.9**	**84.0**	----
13C8-PFOA	----	0.0005	%	**96.2**	**89.4**	**93.7**	**95.0**	----

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1904920**	Page	: 1 of 12
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019
Order number	: 60588844 1.0	Date Analysis Commenced	: 06-Mar-2019
C-O-C number	: ----	Issue Date	: 12-Mar-2019
Sampler	: GABRIELLE MUELLER		
Site	: Project Sam		
Quote number	: EN/004/16		
No. of samples received	: 34		
No. of samples analysed	: 34		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. 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

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.

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: 2219288)									
EB1904920-001	PR/EWM/WP_190219	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0509	0.0470	8.05	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0041	0.0040	0.00	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0051	0.0047	7.35	0% - 50%
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0219	0.0209	4.68	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0037	0.0034	7.32	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.00	No Limit
EB1904920-011	EMB/EV/OSA_High	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: 2219457)									

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: 2219457) - continued									
EB1904920-020	EMB/LP/NSA_High	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
EB1904920-030	EMB/EV/NSB_Low	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0018	0.0017	9.20	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	0.0013	0.0012	9.84	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: 2219288)									
EB1904920-001	PR/EWM/WP_190219	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0132	0.0123	6.90	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0186	0.0172	7.48	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0071	0.0064	10.0	0% - 50%
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0059	0.0053	11.8	0% - 50%
		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
EB1904920-011	EMB/EV/OSA_High	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 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: 2219288) - continued									
EB1904920-011	EMB/EV/OSA_High	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: 2219457)									
EB1904920-020	EMB/LP/NSA_High	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
EB1904920-030	EMB/EV/NSB_Low	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0008	0.0011	30.3	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: 2219288)									
EB1904920-001	PR/EWM/WP_190219	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: 2219288) - continued									
EB1904920-001	PR/EWM/WP_190219	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
EB1904920-011	EMB/EV/OSA_High	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: 2219457)									
EB1904920-020	EMB/LP/NSA_High	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
EB1904920-030	EMB/EV/NSB_Low	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 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: 2219457) - continued									
EB1904920-030	EMB/EV/NSB_Low	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: 2219288)									
EB1904920-001	PR/EWM/WP_190219	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	0.269	0.222	19.0	0% - 20%
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	0.014	0.014	0.00	0% - 50%
		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
EB1904920-011	EMB/EV/OSA_High	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: 2219457)									
EB1904920-020	EMB/LP/NSA_High	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
EB1904920-030	EMB/EV/NSB_Low	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: 2219457) - continued									
EB1904920-030	EMB/EV/NSB_Low	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: 2219288)									
EB1904920-001	PR/EWM/WP_190219	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.414	0.357	14.8	0% - 20%
EB1904920-011	EMB/EV/OSA_High	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2219457)									
EB1904920-020	EMB/LP/NSA_High	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
EB1904920-030	EMB/EV/NSB_Low	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0039	0.0040	2.53	0% - 50%

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: 2219288)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	89.4	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	77.8	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	97.8	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	71.6	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	51.4	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2219457)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	105	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	88.0	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	81.8	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	62.2	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	53.0	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219288)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	84.8	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	80.6	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	108	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	101	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	72.0	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	50.8	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	40.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	50.0	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	48.0	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	61.3	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219457)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	56.4	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	105	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	99.4	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	106	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	99.6	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	98.4	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	68.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	57.0	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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219457) - continued								
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	56.0	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	51.4	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	72.6	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219288)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	58.0	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	123	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	81.8	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	87.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	71.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	43.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	66.2	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219457)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	58.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	51.8	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	50.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	64.9	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	45.7	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	48.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	47.8	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219288)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	113	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	80.4	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	68.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219457)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	123	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	106	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	86.2	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	63.4	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: 2219288)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231P: PFAS Sums (QCLot: 2219457)								
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: 2219288)							
EB1904920-002	PR/EWM/WP/DOS	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	95.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	69.6	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	83.6	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	63.2	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	# Not Determined	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	30.6	30	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2219457)							
EB1904920-021	EMB/LP/NSB_High	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	81.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	73.8	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	60.2	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	73.6	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	55.4	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	37.6	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219288)							
EB1904920-002	PR/EWM/WP/DOS	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	68.2	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	# Not Determined	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	# Not Determined	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	51.2	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	52.4	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	89.6	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	68.8	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	34.2	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	30.6	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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219288) - continued							
EB1904920-002	PR/EWM/WP/DOS	EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	33.0	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	32.6	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219457)							
EB1904920-021	EMB/LP/NSB_High	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	47.0	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	85.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	76.4	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	75.6	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	76.2	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	77.2	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	51.8	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	40.4	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	42.6	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	45.4	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	44.3	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219288)							
EB1904920-002	PR/EWM/WP/DOS	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	31.4	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	30.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	57.3	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	46.2	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	47.7	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	35.2	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	36.2	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219457)							
EB1904920-021	EMB/LP/NSB_High	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	42.4	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	34.9	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	36.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	32.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	33.1	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: 2219457) - continued							
EB1904920-021	EMB/LP/NSB_High	EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	34.2	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	36.4	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219288)							
EB1904920-002	PR/EWM/WP/DOS	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	# Not Determined	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	74.0	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	53.4	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219457)							
EB1904920-021	EMB/LP/NSB_High	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	92.2	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	77.8	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	71.8	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	50.6	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1904920**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019
Site	: Project Sam	Issue Date	: 12-Mar-2019
Sampler	: GABRIELLE MUELLER	No. of samples received	: 34
Order number	: 60588844 1.0	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.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	EB1904920--002	PR/EWM/WP/DOS	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EB1904920--002	PR/EWM/WP/DOS	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EB1904920--002	PR/EWM/WP/DOS	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	EB1904920--002	PR/EWM/WP/DOS	**6:2 Fluorotelomer sulfonic acid (6:2 FTS)**	27619-97-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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/EWM/WP_190219, SW/BEN/DOS_190219	PR/EWM/WP/DOS,	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SW/BEN/MID_190220, PR/AND/WS_190220	SW/BEN/UPS_190220,	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) PR/AND/WS/DOS_190221		**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST)								

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							
EMB/LP/OSA_High, EMB/LP/OSB_High, EMB/LP/OSC_High, EMB/EV/OSA_High, EMB/EV/OSB_High, EMB/EV/OSC_High, EMB/LP/OSA_Low, EMB/LP/OSB_Low, EMB/LP/OSC_Low, EMB/EV/OSA_Low, EMB/EV/OSB_Low, EMB/EV/OSC_Low, EMB/LP/NSA_High, EMB/LP/NSB_High, EMB/LP/NSC_High, EMB/EV/NSA_High, EMB/EV/NSB_High, EMB/EV/NSC_High, EMB/LP/NSA_Low, EMB/LP/NSB_Low, EMB/LP/NSC_Low, EMB/EV/NSA_Low, EMB/EV/NSB_Low, EMB/EV/NSC_Low, QC105_190223, QC106_190223, QC107_190223	**23-Feb-2019**	**06-Mar-2019**	22-Aug-2019	✓	**07-Mar-2019**	22-Aug-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST) PR/EWM/WP_190219, PR/EWM/WP/DOS, SW/BEN/DOS_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SW/BEN/MID_190220, SW/BEN/UPS_190220, PR/AND/WS_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) PR/AND/WS/DOS_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) EMB/LP/OSA_High, EMB/LP/OSB_High, EMB/LP/OSC_High, EMB/EV/OSA_High, EMB/EV/OSB_High, EMB/EV/OSC_High, EMB/LP/OSA_Low, EMB/LP/OSB_Low, EMB/LP/OSC_Low, EMB/EV/OSA_Low, EMB/EV/OSB_Low, EMB/EV/OSC_Low, EMB/LP/NSA_High, EMB/LP/NSB_High, EMB/LP/NSC_High, EMB/EV/NSA_High, EMB/EV/NSB_High, EMB/EV/NSC_High, EMB/LP/NSA_Low, EMB/LP/NSB_Low, EMB/LP/NSC_Low, EMB/EV/NSA_Low, EMB/EV/NSB_Low, EMB/EV/NSC_Low, QC105_190223, QC106_190223, QC107_190223	**23-Feb-2019**	**06-Mar-2019**	22-Aug-2019	✓	**07-Mar-2019**	22-Aug-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
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST) PR/EWM/WP_190219, SW/BEN/DOS_190219	PR/EWM/WP/DOS,	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SW/BEN/MID_190220, PR/AND/WS_190220	SW/BEN/UPS_190220,	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) PR/AND/WS/DOS_190221		**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) EMB/LP/OSA_High, EMB/LP/OSC_High, EMB/EV/OSB_High, EMB/LP/OSA_Low, EMB/LP/OSC_Low, EMB/EV/OSB_Low, EMB/LP/NSA_High, EMB/LP/NSC_High, EMB/EV/NSB_High, EMB/LP/NSA_Low, EMB/LP/NSC_Low, EMB/EV/NSB_Low, QC105_190223, QC107_190223	EMB/LP/OSB_High, EMB/EV/OSA_High, EMB/EV/OSC_High, EMB/LP/OSB_Low, EMB/EV/OSA_Low, EMB/EV/OSC_Low, EMB/LP/NSB_High, EMB/EV/NSA_High, EMB/EV/NSC_High, EMB/LP/NSB_Low, EMB/EV/NSA_Low, EMB/EV/NSC_Low, QC106_190223,	**23-Feb-2019**	**06-Mar-2019**	22-Aug-2019	✓	**07-Mar-2019**	22-Aug-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-ST) PR/EWM/WP_190219, PR/EWM/WP/DOS, SW/BEN/DOS_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SW/BEN/MID_190220, SW/BEN/UPS_190220, PR/AND/WS_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) PR/AND/WS/DOS_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) EMB/LP/OSA_High, EMB/LP/OSB_High, EMB/LP/OSC_High, EMB/EV/OSA_High, EMB/EV/OSB_High, EMB/EV/OSC_High, EMB/LP/OSA_Low, EMB/LP/OSB_Low, EMB/LP/OSC_Low, EMB/EV/OSA_Low, EMB/EV/OSB_Low, EMB/EV/OSC_Low, EMB/LP/NSA_High, EMB/LP/NSB_High, EMB/LP/NSC_High, EMB/EV/NSA_High, EMB/EV/NSB_High, EMB/EV/NSC_High, EMB/LP/NSA_Low, EMB/LP/NSB_Low, EMB/LP/NSC_Low, EMB/EV/NSA_Low, EMB/EV/NSB_Low, EMB/EV/NSC_Low, QC105_190223, QC106_190223, QC107_190223	**23-Feb-2019**	**06-Mar-2019**	22-Aug-2019	✓	**07-Mar-2019**	22-Aug-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
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST) PR/EWM/WP_190219, PR/EWM/WP/DOS, SW/BEN/DOS_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SW/BEN/MID_190220, SW/BEN/UPS_190220, PR/AND/WS_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) PR/AND/WS/DOS_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) EMB/LP/OSA_High, EMB/LP/OSB_High, EMB/LP/OSC_High, EMB/EV/OSA_High, EMB/EV/OSB_High, EMB/EV/OSC_High, EMB/LP/OSA_Low, EMB/LP/OSB_Low, EMB/LP/OSC_Low, EMB/EV/OSA_Low, EMB/EV/OSB_Low, EMB/EV/OSC_Low, EMB/LP/NSA_High, EMB/LP/NSB_High, EMB/LP/NSC_High, EMB/EV/NSA_High, EMB/EV/NSB_High, EMB/EV/NSC_High, EMB/LP/NSA_Low, EMB/LP/NSB_Low, EMB/LP/NSC_Low, EMB/EV/NSA_Low, EMB/EV/NSB_Low, EMB/EV/NSC_Low, QC105_190223, QC106_190223, QC107_190223	**23-Feb-2019**	**06-Mar-2019**	22-Aug-2019	✓	**07-Mar-2019**	22-Aug-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-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 targeted to pristine environmental and drinking waters reporting 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

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: AECOM Australia		SAMPLER:	Gabrielle Mueller
ADDRESS / OFFICE: AECOM Brisbane, 540 Wickham Street, Fortitude Valley 4006, QLD		MOBILE:	0439 042 977
PROJECT MANAGER: James Peachey		PHONE:	
PROJECT ID: 60566644		EMAIL REPORT TO:	Carina.Jakobi@aecom.com, James.Peachey@aecom.com
SITE: Project Sam	P.O. NO.:	EMAIL INVOICE TO: (if different to report)	
RESULTS REQUIRED (Date): Standard TAT	QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

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

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
Please send samples QC203_190221, QC200_190219, QC201_190221 and QC204_190222 to NMI Sydney for analysis - see separate CoC attached

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

ALS ID	SAMPLE ID	MATRIX	DATE	Time	CONTAINER INFORMATION Type / Code	Total bottles	PFAS EP231X (PFAS Full suite 28 analytes) - Superfoss											
1	SA027_190219	W	19/02/2019		1 x P	1	X											
2	SA036_190219	W	19/02/2019		1 x P	1	X											
3	SA037_190219	W	19/02/2019		1 x P	1	X											
4	SA038_190219	W	19/02/2019		1 x P	1	X											
5	SA039_190219	W	19/02/2019		1 x P	1	X											
6	SA041_190219	W	19/02/2019		1 x P	1	X											
7	SA107_190219	W	19/02/2019		1 x P	1	X											
8	SA349_190219	W	19/02/2019		1 x P	1	X											
9	SA350_190221	W	21/02/2019		1 x P	1	X											
10	SA351_190219	W	19/02/2019		1 x P	1	X											
11	SA091_190220	W	20/02/2019		1 x P	1	X											
12	SA026_190219	W	19/02/2019		1 x P	1	X											
13	SA110_190219	W	19/02/2019		1 x P	1	X											
14	SA012_190219	W	19/02/2019		1 x P	1	X											
15	SA013_190219	W	19/02/2019		1 x P	1	X											
16	QC103_190221	W	21/02/2019		1 x P	1	X											
=	QC203_190221	W	21/02/2019		1 x P	1												See comments
17	QC100_190219	W	19/02/2019		1 x P	1	X											
=	QC200_190219	W	19/02/2019		1 x P	1												See comments
18	QC300_190219	W	19/02/2019		1 x P	1	X											
19	QC301_20190221	W	21/02/2019		1 x P	1	X											
20	QC302_190222	W	22/02/2019		1 x P	1	X											
21	ALF_MW02_190222	W	22/02/2019		1 x P	1	X											
22	MB9_190222	W	22/02/2019		1 x P	1	X											
23	AFD_MW22_190219	W	19/02/2019		1 x P	1	X											
24	ALF_MW03_190219	W	19/02/2019		1 x P	1	X											
25	ELS_MW25_190222	W	22/02/2019		1 x P	1	X											
26	LPW_MW33_190222	W	22/02/2019		1 x P	1	X											
27	ELS_MW21_190219	W	19/02/2019		1 x P	1	X											
28	QC101_190221	W	21/02/2019		1 x P	1	X											
=	QC201_190221	W	21/02/2019		1 x P	1												See comments
29	QC104_190222	W	22/02/2019		1 x P	1	X											
=	QC204_190222	W	22/02/2019		1 x P	1												See comments
30	MB5_190221	W	21/02/2019		1 x P	1	X											
31	MB18_190221	W	21/02/2019		1 x P	1	X											
32	MB7_190221	W	21/02/2019		1 x P	1	X											
33	MB13_190221	W	21/02/2019		1 x P	1	X											
34	SA020_190219	W	19/02/2019		1 x P	1	X											
35	SA017_190219	W	19/02/2019		1 x P	1	X											

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name:		Name:	Date:	Con' Note No:
Of: AECOM	Time:	Of:	Time:	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS LABORATORY GROUP

COC Page _3_ of _3_

ENFM (204/5)

Environmental Division
Brisbane
Work Order Reference
EB1904924

Telephone : +61-7-3243 7222

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1904924**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: james.peachey@aecom.com	E-mail	: andrew.epps@alsglobal.com
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Facsimile	: +61 07 3553 2050	Facsimile	: +61-7-3243 7218
Project	: 60588844 1.0	Page	: 1 of 3
Order number	: 60588844 1.0	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Project Sam		
Sampler	: GABRIELLE MUELLER		

Dates

Date Samples Received	: 26-Feb-2019 14:09	Issue Date	: 28-Feb-2019
Client Requested Due Date	: 08-Mar-2019	Scheduled Reporting Date	: **08-Mar-2019**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 24.0°C
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 36 / 36

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
- **Selected QC samples will be forwarded to NMI as per request. Please note, this will incur a freight forwarding fee. This fee has been added to EB1904914 for all work orders in this submission.**
- **28/2/19: SRN has been resent to acknowledge the ID change for sample #36 & to add PFAS ST as requested by client. For any further information regarding these adjustments please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- **Please be advised that an extra sample "SA014" was received in addition to the samples listed on the COC. This sample has been added to the end of the work order and will remain on hold unless we are otherwise advised.**
- 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 ± 1 week) from receipt of samples.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

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
EB1904924-001	19-Feb-2019 00:00	SA027_190219	▯
EB1904924-002	19-Feb-2019 00:00	SA036_190219	▯
EB1904924-003	19-Feb-2019 00:00	SA037_190219	▯
EB1904924-004	19-Feb-2019 00:00	SA038_190219	▯
EB1904924-005	19-Feb-2019 00:00	SA039_190219	▯
EB1904924-006	19-Feb-2019 00:00	SA041_190219	▯
EB1904924-007	19-Feb-2019 00:00	SA107 _190219	▯
EB1904924-008	19-Feb-2019 00:00	SA349_190219	▯
EB1904924-009	21-Feb-2019 00:00	SA350_190221	▯
EB1904924-010	19-Feb-2019 00:00	SA351_190219	▯
EB1904924-011	20-Feb-2019 00:00	SA091_190220	▯
EB1904924-012	19-Feb-2019 00:00	SA026_190219	▯
EB1904924-013	19-Feb-2019 00:00	SA110_190219	▯
EB1904924-014	19-Feb-2019 00:00	SA012_190219	▯
EB1904924-015	19-Feb-2019 00:00	SA013_190219	▯
EB1904924-016	21-Feb-2019 00:00	QC103_190221	▯
EB1904924-017	19-Feb-2019 00:00	QC100_190219	▯
EB1904924-018	19-Feb-2019 00:00	QC300_190219	▯
EB1904924-019	21-Feb-2019 00:00	QC301_20190221	▯
EB1904924-020	22-Feb-2019 00:00	QC302_190222	▯
EB1904924-021	22-Feb-2019 00:00	ALF_MW02_190222	▯
EB1904924-022	22-Feb-2019 00:00	MB9_190222	▯
EB1904924-023	19-Feb-2019 00:00	AFD_MW22_190219	▯
EB1904924-024	19-Feb-2019 00:00	ALF_MW03_190219	▯
EB1904924-025	22-Feb-2019 00:00	ELS_MW25_190222	▯
EB1904924-026	22-Feb-2019 00:00	LPW_MW33_190222	▯
EB1904924-027	19-Feb-2019 00:00	ELS_MW21_190219	▯
EB1904924-028	21-Feb-2019 00:00	QC101_190221	▯
EB1904924-029	22-Feb-2019 00:00	QC104_190222	▯
EB1904924-030	21-Feb-2019 00:00	MB5_190221	▯
EB1904924-031	21-Feb-2019 00:00	MB18_190221	▯
EB1904924-032	21-Feb-2019 00:00	MB7_190221	▯
EB1904924-033	21-Feb-2019 00:00	MB13_190221	▯
EB1904924-034	19-Feb-2019 00:00	SA020_190219	▯
EB1904924-035	19-Feb-2019 00:00	SA017_190219	▯

			WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB1904924-036	23-Feb-2019 00:00	SA014_190223	☐

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	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

CARINA JAKOBI

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

JAMES PEACHEY

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

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1904924**	Page	: 1 of 19
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019 14:09
Order number	: 60588844 1.0	Date Analysis Commenced	: 04-Mar-2019
C-O-C number	: ----	Issue Date	: 12-Mar-2019 08:45
Sampler	: GABRIELLE MUELLER		
Site	: Project Sam		
Quote number	: EN/004/16		
No. of samples received	: 36		
No. of samples analysed	: 36		

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.

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.

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).**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				SA027_190219	SA036_190219	SA037_190219	SA038_190219	SA039_190219
				19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-001	EB1904924-002	EB1904924-003	EB1904924-004	EB1904924-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0013**	<0.0005	<0.0005	<0.0005	**0.0019**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0010**	<0.0005	<0.0005	<0.0005	**0.0019**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0070**	<0.0005	<0.0005	**0.0006**	**0.0113**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	**0.0008**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0025**	**0.0006**	<0.0003	<0.0003	**0.0146**
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	**0.0009**
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)				SA027_190219	SA036_190219	SA037_190219	SA038_190219	SA039_190219
				19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-001	EB1904924-002	EB1904924-003	EB1904924-004	EB1904924-005
				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	**0.0118**	**0.0006**	<0.0003	**0.0006**	**0.0314**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0095**	**0.0006**	<0.0003	**0.0006**	**0.0259**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0108**	**0.0006**	<0.0003	**0.0006**	**0.0287**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**60.9**	**61.3**	**66.8**	**65.8**	**71.0**
13C8-PFOA	----	0.0005	%	**94.0**	**91.8**	**79.8**	**86.1**	**90.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				SA041_190219	SA107 _190219	SA349_190219	SA350_190221	SA351_190219
				19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	21-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-006	EB1904924-007	EB1904924-008	EB1904924-009	EB1904924-010
				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	**0.0009**
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	**0.0008**	<0.0005	<0.0005	<0.0005	**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	<0.0003	**0.0012**	<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	<0.0005	<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)				SA041_190219	SA107 _190219	SA349_190219	SA350_190221	SA351_190219
				19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	21-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-006	EB1904924-007	EB1904924-008	EB1904924-009	EB1904924-010
				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	**0.0008**	**0.0012**	<0.0003	<0.0003	**0.0018**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0008**	**0.0012**	<0.0003	<0.0003	**0.0009**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0008**	**0.0012**	<0.0003	<0.0003	**0.0018**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**65.6**	**90.7**	**62.6**	**78.7**	**61.6**
13C8-PFOA	----	0.0005	%	**82.9**	**91.0**	**85.0**	**90.1**	**81.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				SA091_190220	SA026_190219	SA110_190219	SA012_190219	SA013_190219
				20-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-011	EB1904924-012	EB1904924-013	EB1904924-014	EB1904924-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	**0.0032**	**0.0012**	**0.0023**	**0.0014**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	**0.0028**	**0.0008**	**0.0018**	**0.0008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0020**	**0.0123**	**0.0033**	**0.0112**	**0.0035**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	**0.0012**	<0.0005	**0.0005**	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	**0.0127**	**0.0013**	**0.0087**	**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	**0.0007**	**0.0005**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	**0.0029**	<0.0005	**0.0015**	**0.0014**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	**0.0008**	<0.0005	**0.0005**	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	**0.0011**	<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)				SA091_190220	SA026_190219	SA110_190219	SA012_190219	SA013_190219
				20-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-011	EB1904924-012	EB1904924-013	EB1904924-014	EB1904924-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	**0.0020**	**0.0370**	**0.0066**	**0.0272**	**0.0099**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0020**	**0.0250**	**0.0046**	**0.0199**	**0.0058**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0020**	**0.0330**	**0.0058**	**0.0249**	**0.0091**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**61.1**	**63.2**	**63.7**	**68.4**	**65.1**
13C8-PFOA	----	0.0005	%	**81.0**	**78.8**	**85.3**	**85.2**	**84.5**

Analytical Results

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

				QC103_190221	QC100_190219	QC300_190219	QC301_20190221	QC302_190222
				21-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	21-Feb-2019 00:00	22-Feb-2019 00:00
				EB1904924-016	EB1904924-017	EB1904924-018	EB1904924-019	EB1904924-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0201**	**0.0038**	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0068**	**0.0031**	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0455**	**0.0138**	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0054**	**0.0013**	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.215**	**0.0135**	<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	**0.004**	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0072**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0126**	**0.0034**	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0102**	**0.0009**	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0318**	**0.0012**	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	**0.0015**	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	**0.0006**	<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)				QC103_190221	QC100_190219	QC300_190219	QC301_20190221	QC302_190222
				21-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	21-Feb-2019 00:00	22-Feb-2019 00:00
				EB1904924-016	EB1904924-017	EB1904924-018	EB1904924-019	EB1904924-020
				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	**0.002**	<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	**0.363**	**0.0410**	<0.0003	<0.0003	<0.0003
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.260**	**0.0273**	<0.0003	<0.0003	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.348**	**0.0366**	<0.0003	<0.0003	<0.0003
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**73.2**	**61.4**	**67.0**	**67.9**	**72.9**
13C8-PFOA	----	0.0005	%	**84.7**	**84.2**	**79.9**	**82.0**	**78.6**

Analytical Results

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

				ALF_MW02_190222	MB9_190222	AFD_MW22_190219	ALF_MW03_190219	ELS_MW25_190222
				22-Feb-2019 00:00	22-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	22-Feb-2019 00:00
				EB1904924-021	EB1904924-022	EB1904924-023	EB1904924-024	EB1904924-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0033**	**0.0029**	<0.0005	**0.0080**	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0032**	**0.0013**	<0.0005	**0.0042**	**0.0009**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0290**	**0.0108**	**0.0015**	**0.0399**	**0.0098**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0019**	**0.0007**	<0.0005	**0.0019**	**0.0005**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0091**	**0.0144**	**0.0018**	**0.0053**	**0.0125**
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	**0.0009**	**0.0008**	**0.0016**	**0.0007**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0036**	**0.0030**	**0.0009**	**0.0109**	**0.0012**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0007**	**0.0018**	<0.0005	**0.0025**	**0.0010**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0013**	**0.0077**	**0.0006**	**0.0028**	**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)				ALF_MW02_190222	MB9_190222	AFD_MW22_190219	ALF_MW03_190219	ELS_MW25_190222
				22-Feb-2019 00:00	22-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00	22-Feb-2019 00:00
				EB1904924-021	EB1904924-022	EB1904924-023	EB1904924-024	EB1904924-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<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	**0.0521**	**0.0435**	**0.0056**	**0.0771**	**0.0275**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0381**	**0.0252**	**0.0033**	**0.0452**	**0.0223**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0470**	**0.0415**	**0.0056**	**0.0710**	**0.0261**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**73.0**	**68.3**	**70.9**	**61.0**	**80.4**
13C8-PFOA	----	0.0005	%	**93.9**	**89.7**	**90.2**	**94.0**	**98.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				LPW_MW33_190222	ELS_MW21_190219	QC101_190221	QC104_190222	MB5_190221
				22-Feb-2019 00:00	19-Feb-2019 00:00	21-Feb-2019 00:00	22-Feb-2019 00:00	21-Feb-2019 00:00
				EB1904924-026	EB1904924-027	EB1904924-028	EB1904924-029	EB1904924-030
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	<0.0005	**0.0031**	**0.0200**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0006**	**0.0013**	<0.0005	**0.0014**	**0.0066**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0043**	**0.0202**	<0.0005	**0.0119**	**0.0517**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	**0.0009**	<0.0005	**0.0007**	**0.0051**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0044**	**0.0175**	<0.0003	**0.0156**	**0.203**
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	**0.0015**	<0.0005	**0.0008**	**0.0067**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0007**	**0.0035**	<0.0005	**0.0029**	**0.0125**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	**0.0028**	<0.0005	**0.0018**	**0.0101**
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	**0.0022**	<0.0005	**0.0082**	**0.0373**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	**0.0016**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	**0.0007**
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	**0.0006**
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)				LPW_MW33_190222	ELS_MW21_190219	QC101_190221	QC104_190222	MB5_190221
				22-Feb-2019 00:00	19-Feb-2019 00:00	21-Feb-2019 00:00	22-Feb-2019 00:00	21-Feb-2019 00:00
				EB1904924-026	EB1904924-027	EB1904924-028	EB1904924-029	EB1904924-030
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	**0.002**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
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	**0.0100**	**0.0499**	<0.0003	**0.0464**	**0.358**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0087**	**0.0377**	<0.0003	**0.0275**	**0.255**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0094**	**0.0477**	<0.0003	**0.0443**	**0.343**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**91.2**	**78.1**	**72.3**	**62.9**	**78.4**
13C8-PFOA	----	0.0005	%	**90.5**	**95.8**	**92.6**	**95.4**	**97.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MB18_190221	MB7_190221	MB13_190221	SA020_190219	SA017_190219
				21-Feb-2019 00:00	21-Feb-2019 00:00	21-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-031	EB1904924-032	EB1904924-033	EB1904924-034	EB1904924-035
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0313**	**0.0135**	<0.0005	**0.0011**	**0.0007**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0172**	**0.0065**	**0.0007**	**0.0007**	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.159**	**0.0342**	**0.0033**	**0.0038**	**0.0024**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0079**	**0.0031**	**0.0007**	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.174**	**0.0465**	**0.0200**	**0.0024**	**0.0022**
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	**0.0208**	**0.0099**	**0.0009**	**0.0007**	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0345**	**0.0132**	**0.0012**	**0.0007**	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	**0.0183**	**0.0064**	**0.0019**	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	**0.0526**	**0.0185**	**0.0086**	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	**0.0015**	**0.0008**	<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)				MB18_190221	MB7_190221	MB13_190221	SA020_190219	SA017_190219
				21-Feb-2019 00:00	21-Feb-2019 00:00	21-Feb-2019 00:00	19-Feb-2019 00:00	19-Feb-2019 00:00
				EB1904924-031	EB1904924-032	EB1904924-033	EB1904924-034	EB1904924-035
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<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	**0.517**	**0.153**	**0.0373**	**0.0094**	**0.0053**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.333**	**0.0807**	**0.0233**	**0.0062**	**0.0046**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.490**	**0.142**	**0.0359**	**0.0087**	**0.0053**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**79.8**	**69.0**	**67.3**	**71.9**	**79.8**
13C8-PFOA	----	0.0005	%	**99.7**	**92.5**	**88.6**	**94.5**	**73.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				SA014_190223	----	----	----	----
				23-Feb-2019 00:00	----	----	----	----
				EB1904924-036	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	**0.0009**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0005**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0035**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	----	----	----	----
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	**0.0006**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0008**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				SA014_190223	----	----	----	----
				23-Feb-2019 00:00	----	----	----	----
				EB1904924-036	--------	--------	--------	--------
				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	**0.0063**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0035**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0058**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**64.2**	----	----	----	----
13C8-PFOA	----	0.0005	%	**91.2**	----	----	----	----

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1904924**	Page	: 1 of 16
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Contact	: Andrew Epps
Address	: PO BOX 1307 FORTITUDE VALLEY QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3553 2000	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019
Order number	: 60588844 1.0	Date Analysis Commenced	: 04-Mar-2019
C-O-C number	: ----	Issue Date	: 12-Mar-2019
Sampler	: GABRIELLE MUELLER		
Site	: Project Sam		
Quote number	: EN/004/16		
No. of samples received	: 36		
No. of samples analysed	: 36		

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

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.

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: 2213789)									
EB1904924-018	QC300_190219	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
EB1904924-025	ELS_MW25_190222	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0125	0.0134	6.95	0% - 20%
		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	0.0009	0.0006	38.9	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0098	0.0096	2.07	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
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2219457)									

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: 2219457) - continued									
EB1904920-020	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
EB1904920-030	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0018	0.0017	9.20	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	0.0013	0.0012	9.84	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: 2219800)									
EB1904924-003	SA037_190219	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
EB1904924-013	SA110_190219	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0013	0.0012	7.87	No Limit
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0012	0.0012	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: 2219800) - continued									
EB1904924-013	SA110_190219	EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0008	0.0008	0.00	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0033	0.0034	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: 2213789)									
EB1904924-018	QC300_190219	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
EB1904924-025	ELS_MW25_190222	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0007	0.0007	0.00	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0012	0.0009	24.3	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0010	0.0009	0.00	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0009	0.0008	11.2	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: 2219457)									
EB1904920-020	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

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: 2219457) - continued									
EB1904920-020	Anonymous	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
EB1904920-030	Anonymous	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0008	0.0011	30.3	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: 2219800)									
EB1904924-003	SA037_190219	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
EB1904924-013	SA110_190219	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

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: 2219800) - continued									
EB1904924-013	SA110_190219	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: 2213789)									
EB1904924-018	QC300_190219	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
EB1904924-025	ELS_MW25_190222	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: 2219457)									
EB1904920-020	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

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: 2219457) - continued									
EB1904920-020	Anonymous	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
EB1904920-030	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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2219800)									
EB1904924-003	SA037_190219	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
EB1904924-013	SA110_190219	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: 2219800) - continued									
EB1904924-013	SA110_190219	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: 2213789)									
EB1904924-018	QC300_190219	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
EB1904924-025	ELS_MW25_190222	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: 2219457)									
EB1904920-020	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
EB1904920-030	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

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: 2219457) - continued									
EB1904920-030	Anonymous	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: 2219800)									
EB1904924-003	SA037_190219	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
EB1904924-013	SA110_190219	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: 2213789)									
EB1904924-018	QC300_190219	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
EB1904924-025	ELS_MW25_190222	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0275	0.0269	2.20	0% - 20%
EP231P: PFAS Sums (QC Lot: 2219457)									
EB1904920-020	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
EB1904920-030	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0039	0.0040	2.53	0% - 50%
EP231P: PFAS Sums (QC Lot: 2219800)									
EB1904924-003	SA037_190219	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	<0.0003	0.00	No Limit
EB1904924-013	SA110_190219	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0066	0.0066	0.00	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: 2213789)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	78.8	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	89.6	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	77.2	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	98.6	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	85.0	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	94.8	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2219457)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	105	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	88.0	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	81.8	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	62.2	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	53.0	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2219800)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.01 µg/L	87.4	50	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.01 µg/L	95.6	50	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.01 µg/L	78.2	50	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.01 µg/L	120	50	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.01 µg/L	92.8	50	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.01 µg/L	70.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2213789)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	95.0	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	97.6	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	91.2	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	91.2	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	83.0	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	86.4	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	87.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	95.8	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	82.2	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	81.2	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	90.4	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219457)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	56.4	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: 2219457) - continued								
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	105	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	99.4	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	106	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	99.6	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	98.4	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	68.0	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	57.0	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	56.0	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	51.4	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	72.6	40	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219800)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.05 µg/L	71.5	30	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.01 µg/L	92.0	50	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.01 µg/L	93.2	50	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.01 µg/L	95.4	50	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.01 µg/L	79.0	50	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.01 µg/L	66.0	50	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.01 µg/L	67.4	50	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	83.2	40	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.01 µg/L	66.4	40	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.01 µg/L	67.4	40	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.025 µg/L	62.3	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2213789)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	82.8	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	96.5	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	87.7	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	90.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	90.6	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	90.0	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	86.4	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219457)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	58.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	51.8	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: 2219457) - continued								
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	50.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	64.9	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	45.7	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	48.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	47.8	40	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219800)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.01 µg/L	50.8	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.025 µg/L	63.2	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.025 µg/L	69.4	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.025 µg/L	58.1	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.025 µg/L	56.2	40	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.01 µg/L	72.4	40	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.01 µg/L	94.0	40	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2213789)								
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	90.4	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	90.0	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	87.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219457)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	123	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	106	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	86.2	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	63.4	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219800)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.01 µg/L	114	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	94.0	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	68.6	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	70.8	50	130
EP231P: PFAS Sums (QCLot: 2213789)								
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	LCS: Spike Recovery (%)	Recovery Limits (%): Low	Recovery Limits (%): High
EP231P: PFAS Sums (QCLot: 2219457)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231P: PFAS Sums (QCLot: 2219800)								
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: 2213789)							
EB1904924-019	QC301_20190221	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	85.4	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	84.8	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	83.0	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	115	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	101	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	91.6	30	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2219457)							
EB1904920-021	Anonymous	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	81.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	73.8	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	60.2	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	73.6	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	55.4	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	37.6	30	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2219800)							
EB1904924-004	SA038_190219	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.01 µg/L	88.8	50	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.01 µg/L	95.4	50	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 µg/L	75.6	50	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.01 µg/L	94.0	50	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 µg/L	67.6	50	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.01 µg/L	56.2	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2213789)							
EB1904924-019	QC301_20190221	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	84.3	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	102	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	103	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	102	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	91.0	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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2213789) - continued							
EB1904924-019	QC301_20190221	EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	88.0	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	86.2	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	87.6	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	84.0	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	74.8	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	88.6	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219457)							
EB1904920-021	Anonymous	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	47.0	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	85.0	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	76.4	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	75.6	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	76.2	50	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.01 µg/L	77.2	50	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.01 µg/L	51.8	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	40.4	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	42.6	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	45.4	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	44.3	30	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2219800)							
EB1904924-004	SA038_190219	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	64.8	30	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.01 µg/L	84.8	50	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.01 µg/L	88.0	50	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.01 µg/L	95.4	50	130
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 µg/L	80.6	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	59.0	50	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.01 µg/L	55.2	30	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.01 µg/L	57.0	30	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.01 µg/L	60.0	30	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.025 µg/L	59.1	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2213789)							
EB1904924-019	QC301_20190221	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	76.8	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	82.9	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	69.0	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	72.3	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: 2213789) - continued							
EB1904924-019	QC301_20190221	EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	88.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	85.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	91.6	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219457)							
EB1904920-021	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	42.4	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.025 µg/L	34.9	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.025 µg/L	36.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	32.8	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	33.1	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	34.2	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	36.4	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2219800)							
EB1904924-004	SA038_190219	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.01 µg/L	66.6	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	49.7	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.025 µg/L	50.6	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.025 µg/L	52.2	30	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.01 µg/L	50.4	30	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.01 µg/L	54.8	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2213789)							
EB1904924-019	QC301_20190221	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	102	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	114	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	102	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	80.0	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*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219457)							
EB1904920-021	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	92.2	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	77.8	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	71.8	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	50.6	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2219800)							
EB1904924-004	SA038_190219	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.01 µg/L	114	50	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.01 µg/L	103	50	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.01 µg/L	82.2	50	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.01 µg/L	64.6	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1904924**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR JAMES PEACHEY	Telephone	: +61 7 3552 8639
Project	: 60588844 1.0	Date Samples Received	: 26-Feb-2019
Site	: Project Sam	Issue Date	: 12-Mar-2019
Sampler	: GABRIELLE MUELLER	No. of samples received	: 36
Order number	: 60588844 1.0	No. of samples analysed	: 36

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) QC300_190219, AFD_MW22_190219, ALF_MW03_190219, ELS_MW21_190219, SA020_190219, SA017_190219	**19-Feb-2019**	**04-Mar-2019**	18-Aug-2019	✓	**04-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA027_190219, SA036_190219, SA037_190219, SA038_190219, SA039_190219, SA041_190219, SA107 _190219, SA349_190219, SA351_190219, SA026_190219, SA110_190219, SA012_190219, SA013_190219, QC100_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA091_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC301_20190221, QC101_190221, MB5_190221, MB18_190221, MB7_190221, MB13_190221	**21-Feb-2019**	**04-Mar-2019**	20-Aug-2019	✓	**04-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA350_190221, QC103_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC302_190222, ALF_MW02_190222, MB9_190222, ELS_MW25_190222, LPW_MW33_190222, QC104_190222	**22-Feb-2019**	**04-Mar-2019**	21-Aug-2019	✓	**04-Mar-2019**	21-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA014_190223	**23-Feb-2019**	**04-Mar-2019**	22-Aug-2019	✓	**04-Mar-2019**	22-Aug-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) QC300_190219, AFD_MW22_190219, ALF_MW03_190219, ELS_MW21_190219, SA020_190219, SA017_190219	**19-Feb-2019**	**04-Mar-2019**	18-Aug-2019	✓	**04-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA027_190219, SA036_190219, SA037_190219, SA038_190219, SA039_190219, SA041_190219, SA107 _190219, SA349_190219, SA351_190219, SA026_190219, SA110_190219, SA012_190219, SA013_190219, QC100_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA091_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC301_20190221, QC101_190221, MB5_190221, MB18_190221, MB7_190221, MB13_190221	**21-Feb-2019**	**04-Mar-2019**	20-Aug-2019	✓	**04-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA350_190221, QC103_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC302_190222, ALF_MW02_190222, MB9_190222, ELS_MW25_190222, LPW_MW33_190222, QC104_190222	**22-Feb-2019**	**04-Mar-2019**	21-Aug-2019	✓	**04-Mar-2019**	21-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA014_190223	**23-Feb-2019**	**04-Mar-2019**	22-Aug-2019	✓	**04-Mar-2019**	22-Aug-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
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST) QC300_190219, AFD_MW22_190219, ALF_MW03_190219, ELS_MW21_190219, SA020_190219, SA017_190219	**19-Feb-2019**	**04-Mar-2019**	18-Aug-2019	✓	**04-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA027_190219, SA036_190219, SA037_190219, SA038_190219, SA039_190219, SA041_190219, SA107 _190219, SA349_190219, SA351_190219, SA026_190219, SA110_190219, SA012_190219, SA013_190219, QC100_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA091_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC301_20190221, QC101_190221, MB5_190221, MB18_190221, MB7_190221, MB13_190221	**21-Feb-2019**	**04-Mar-2019**	20-Aug-2019	✓	**04-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA350_190221, QC103_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC302_190222, ALF_MW02_190222, MB9_190222, ELS_MW25_190222, LPW_MW33_190222, QC104_190222	**22-Feb-2019**	**04-Mar-2019**	21-Aug-2019	✓	**04-Mar-2019**	21-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA014_190223	**23-Feb-2019**	**04-Mar-2019**	22-Aug-2019	✓	**04-Mar-2019**	22-Aug-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-ST) QC300_190219, AFD_MW22_190219, ALF_MW03_190219, ELS_MW21_190219, SA020_190219, SA017_190219	**19-Feb-2019**	**04-Mar-2019**	18-Aug-2019	✓	**04-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA027_190219, SA036_190219, SA037_190219, SA038_190219, SA039_190219, SA041_190219, SA107 _190219, SA349_190219, SA351_190219, SA026_190219, SA110_190219, SA012_190219, SA013_190219, QC100_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA091_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC301_20190221, QC101_190221, MB5_190221, MB18_190221, MB7_190221, MB13_190221	**21-Feb-2019**	**04-Mar-2019**	20-Aug-2019	✓	**04-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA350_190221, QC103_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC302_190222, ALF_MW02_190222, MB9_190222, ELS_MW25_190222, LPW_MW33_190222, QC104_190222	**22-Feb-2019**	**04-Mar-2019**	21-Aug-2019	✓	**04-Mar-2019**	21-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA014_190223	**23-Feb-2019**	**04-Mar-2019**	22-Aug-2019	✓	**04-Mar-2019**	22-Aug-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
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST) QC300_190219, AFD_MW22_190219, ALF_MW03_190219, ELS_MW21_190219, SA020_190219, SA017_190219	**19-Feb-2019**	**04-Mar-2019**	18-Aug-2019	✓	**04-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA027_190219, SA036_190219, SA037_190219, SA038_190219, SA039_190219, SA041_190219, SA107 _190219, SA349_190219, SA351_190219, SA026_190219, SA110_190219, SA012_190219, SA013_190219, QC100_190219	**19-Feb-2019**	**06-Mar-2019**	18-Aug-2019	✓	**07-Mar-2019**	18-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA091_190220	**20-Feb-2019**	**06-Mar-2019**	19-Aug-2019	✓	**07-Mar-2019**	19-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC301_20190221, QC101_190221, MB5_190221, MB18_190221, MB7_190221, MB13_190221	**21-Feb-2019**	**04-Mar-2019**	20-Aug-2019	✓	**04-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA350_190221, QC103_190221	**21-Feb-2019**	**06-Mar-2019**	20-Aug-2019	✓	**07-Mar-2019**	20-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) QC302_190222, ALF_MW02_190222, MB9_190222, ELS_MW25_190222, LPW_MW33_190222, QC104_190222	**22-Feb-2019**	**04-Mar-2019**	21-Aug-2019	✓	**04-Mar-2019**	21-Aug-2019	✓
HDPE (no PTFE) (EP231X-ST) SA014_190223	**23-Feb-2019**	**04-Mar-2019**	22-Aug-2019	✓	**04-Mar-2019**	22-Aug-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-ST	6	51	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	3	51	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	3	51	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	3	51	**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 targeted to pristine environmental and drinking waters reporting 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

AECO06/190228 Am
Due: 07/03/19

NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:	Townsville	Internal use only	
Company Name:	AECOM Australia Pty Ltd	NMI Quote Number:	Valid until:
Address:	Level 5 - 7-13 Tomlins Street, South Townsville, QLD 4810	LIMS Reference:	
Contact:	Carina Jakobi (carina.jakobi@aecom.com)	Additional email(s) for repo james.peachey@aecom.com	
Sampler:	Luke McIver (luke.mciver@aecom.com		
ABN:		Additional email(s) invoice: AP_CustomerService.ANZ@aecom.com	
Contact email:	carina.jakobi@aecom.com		

Job Reference : Project Sam 60588844

TURN AROUND TIME REQUESTED (Working days):

24 hrs	48 hrs	3-4	7	10	20	other (please specify)
100%	50%	25%	Standard		dioxins	
			X			

*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission

Esdat format required

NMI LRN (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	SAMPLE MATRIX (water / soil / biota)	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)													COMMENTS
				Hold	PFAS Extended Suite supertrace analysis (low level)	PFAS Extended Suite											
N19/005348	QC200_190219	19/02/2019	Water		x												
N19/005349	QC201_190221	21/02/2019	Water		x												
N19/005350	QC203_190221	21/02/2019	Water		x												
N19/005351	QC204_190222	22/02/2019	Water		x												
N19/005352	QC205_190223	23/02/2019	Water		x												
N19/005353	QC206_190223	23/02/2019	Water		x												
N19/005354	QC207_190223	23/02/2019	Water		x												
N19/005355	QC208_190223	23/02/2019	soil			x											
ONLY																	

RECEIVED
28 FEB 2019

Relinquished by:		Received at NMI laboratory by:	BY: Am 14:15
Print Name:		Print Name:	PAGE No: of PAGES
Date & Time:	/ / : hrs	Date & Time: / / : hrs	
Signature:		Signature:	If multiple pages, ensure ALL pages are stapled together

LAB 0000 85619

TO:

Attention: Gavin Stevenson
National Measurement Institute (NMI)
105 Delhi Road, North Ryde, NSW 2113
P: +61 2 9449 0140 | M: +61 404 461 101

FROM: AECOM
Level 5, 7-13 Tomlins Street, South Townsville, QLD 4810
Contact: Anna Roberts
Mobile: 0499 989 462

Samples for AECOM Project No: 60588844

Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: JAMES PEACHEY

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: james.peachey@aecom.com

Telephone:

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Susanne Neuman

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: Susanne.Neuman@measurement.gov.au

Telephone: 02 9449 0181

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/190228**

Total No. of Samples: **8**

LRNs	Customer Sample ID	Lab Sample Description
N19/005348	QC200_190219	WATER
N19/005349	QC201_190221	WATER
N19/005350	QC203_190221	WATER
N19/005351	QC204_190222	WATER
N19/005352	QC205_190223	WATER
N19/005353	QC206_190223	WATER
N19/005354	QC207_190223	WATER
N19/005355	QC208_190223	SOIL

SAMPLE RECEIVED CONDITION

Date samples received:	28-FEB-2019
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60588844
Temperature of samples:	Chilled
Comments:	ALL OK
Estimated report date:	7-MAR-2019
Mode of Delivery:	Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at http://www.measurement.gov.au/Services/EnvironmentalTesting/Pages/Terms-and-Conditions.aspx

REPORT OF ANALYSIS

Report No. RN1224653

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/190228
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: 60588844_1_04
		Date Received	: 28-FEB-2019
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N19/005355	QC208_190223	SOIL

Lab Reg No.		N19/005355				
Date Sampled		23-FEB-2019				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002				NR70
PFPeA (2706-90-3)	mg/kg	<0.002				NR70
PFHxA (307-24-4)	mg/kg	<0.001				NR70
PFHpA (375-85-9)	mg/kg	<0.001				NR70
PFOA (335-67-1)	mg/kg	<0.001				NR70
PFNA (375-95-1)	mg/kg	<0.001				NR70
PFDA (335-76-2)	mg/kg	<0.001				NR70
PFUdA (2058-94-8)	mg/kg	<0.002				NR70
PFDoA (307-55-1)	mg/kg	<0.002				NR70
PFTrDA (72629-94-8)	mg/kg	<0.002				NR70
PFTeDA (376-06-7)	mg/kg	<0.002				NR70
PFHxDA (67905-19-5)	mg/kg	<0.002				NR70
PFODA (16517-11-6)	mg/kg	<0.005				NR70
FOUEA (70887-84-2)	mg/kg	<0.001				NR70
PFBS (375-73-5)	mg/kg	<0.001				NR70
PFPeS (2706-91-4)	mg/kg	<0.001				NR70
PFHxS (355-46-4)	mg/kg	<0.001				NR70
PFHpS (375-92-8)	mg/kg	<0.001				NR70
PFOS (1763-23-1)	mg/kg	<0.002				NR70
PFNS (68259-12-1)	mg/kg	<0.001				NR70
PFDS (335-77-3)	mg/kg	<0.001				NR70
PFOSA (754-91-6)	mg/kg	<0.001				NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002				NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002				NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002				NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002				NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005				NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005				NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001				NR70

REPORT OF ANALYSIS

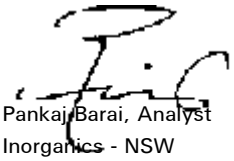
Lab Reg No.		N19/005355				
Date Sampled		23-FEB-2019				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	mg/kg	<0.001				NR70
8:2 FTS (39108-34-4)	mg/kg	<0.001				NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002				NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002				NR70
PFBA (Surrogate Recovery)	%	119				NR70
PFPeA (Surrogate Recovery)	%	110				NR70
PFHxA (Surrogate Recovery)	%	111				NR70
PFHpA (Surrogate Recovery)	%	113				NR70
PFOA (Surrogate Recovery)	%	122				NR70
PFNA (Surrogate Recovery)	%	106				NR70
PFDA (Surrogate Recovery)	%	100				NR70
PFUdA (Surrogate Recovery)	%	115				NR70
PFDoA (Surrogate Recovery)	%	126				NR70
PFTeDA (Surrogate Recovery)	%	118				NR70
PFHxDA (Surrogate Recovery)	%	130				NR70
FOUEA (Surrogate Recovery)	%	61				NR70
PFBS (Surrogate Recovery)	%	114				NR70
PFHxS (Surrogate Recovery)	%	132				NR70
PFOS (Surrogate Recovery)	%	107				NR70
PFOSA (Surrogate Recovery)	%	121				NR70
N-MeFOSA (Surrogate Recovery)	%	131				NR70
N-EtFOSA (Surrogate Recovery)	%	177				NR70
N-MeFOSAA (Surrogate Recovery)	%	103				NR70
N-EtFOSAA (Surrogate Recovery)	%	93				NR70
N-MeFOSE (Surrogate Recovery)	%	95				NR70
N-EtFOSE (Surrogate Recovery)	%	102				NR70
4:2 FTS (Surrogate Recovery)	%	71				NR70
6:2 FTS (Surrogate Recovery)	%	107				NR70
8:2 FTS (Surrogate Recovery)	%	68				NR70
8:2 diPAP (Surrogate Recovery)	%	63				NR70
Dates						
Date extracted		6-MAR-2019				
Date analysed		6-MAR-2019				

Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

07-MAR-2019

REPORT OF ANALYSIS

Lab Reg No.		N19/005355				
Date Sampled		23-FEB-2019				
	Units					Method
Trace Elements						
Total Solids	%	70.2				NT2_49



Pankaj Barai, Analyst
Inorganics - NSW
Accreditation No. 198

07-MAR-2019

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Report No. RN1224653

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/190228
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: 60588844_1_04
		Date Received	: 28-FEB-2019
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N19/005348	QC200_190219	WATER
N19/005349	QC201_190221	WATER
N19/005350	QC203_190221	WATER
N19/005351	QC204_190222	WATER

Lab Reg No.			N19/005348	N19/005349	N19/005350	N19/005351	
Date Sampled			19-FEB-2019	21-FEB-2019	21-FEB-2019	22-FEB-2019	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	<0.005	<0.005	0.020	<0.005	NR70
PFPeA (2706-90-3)		ug/L	<0.002	<0.002	0.0068	<0.002	NR70
PFHxA (307-24-4)		ug/L	0.0026	<0.001	0.010	0.0024	NR70
PFHpA (375-85-9)		ug/L	<0.001	<0.001	0.0086	0.0011	NR70
PFOA (335-67-1)		ug/L	0.0011	<0.001	0.033	0.0061	NR70
PFNA (375-95-1)		ug/L	<0.001	<0.001	0.0014	<0.001	NR70
PFDA (335-76-2)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFUdA (2058-94-8)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDoA (307-55-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFTrDA (72629-94-8)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFTeDA (376-06-7)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFHxDA (67905-19-5)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFODA (16517-11-6)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
FOUEA (70887-84-2)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFBS (375-73-5)		ug/L	<0.001	<0.001	0.0087	0.0020	NR70
PFPeS (2706-91-4)		ug/L	0.0024	<0.001	0.0051	0.0011	NR70
PFHxS (355-46-4)		ug/L	0.013	<0.001	0.044	0.011	NR70
PFHpS (375-92-8)		ug/L	<0.001	<0.001	0.0036	<0.001	NR70
PFOS (1763-23-1)		ug/L	0.015	<0.002	0.28	0.018	NR70
PFNS (68259-12-1)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFDS (335-77-3)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
PFOSA (754-91-6)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
N-MeFOSA (31506-32-8)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
N-EtFOSA (4151-50-2)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70

REPORT OF ANALYSIS

Lab Reg No.			N19/005348	N19/005349	N19/005350	N19/005351	
Date Sampled			19-FEB-2019	21-FEB-2019	21-FEB-2019	22-FEB-2019	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-MeFOSE (24448-09-7)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
N-EtFOSE (1691-99-2)		ug/L	<0.005	<0.005	<0.005	<0.005	NR70
4:2 FTS (757124-72-4)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
6:2 FTS (27619-97-2)		ug/L	<0.001	<0.001	0.0025	<0.001	NR70
8:2 FTS (39108-34-4)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
10:2 FTS (120226-60-0)		ug/L	<0.001	<0.001	<0.001	<0.001	NR70
8:2 diPAP (678-41-1)		ug/L	<0.002	<0.002	<0.002	<0.002	NR70
PFBA (Surrogate Recovery)		%	103	101	103	105	NR70
PFPeA (Surrogate Recovery)		%	91	92	107	101	NR70
PFHxA (Surrogate Recovery)		%	103	92	99	109	NR70
PFHpA (Surrogate Recovery)		%	93	87	102	102	NR70
PFOA (Surrogate Recovery)		%	88	91	104	110	NR70
PFNA (Surrogate Recovery)		%	73	86	90	97	NR70
PFDA (Surrogate Recovery)		%	69	71	79	91	NR70
PFUdA (Surrogate Recovery)		%	70	69	68	85	NR70
PFDoA (Surrogate Recovery)		%	53	75	58	96	NR70
PFTeDA (Surrogate Recovery)		%	47	72	61	99	NR70
PFHxDA (Surrogate Recovery)		%	39	37	65	113	NR70
FOUEA (Surrogate Recovery)		%	70	72	81	95	NR70
PFBS (Surrogate Recovery)		%	93	94	106	107	NR70
PFHxS (Surrogate Recovery)		%	101	96	102	111	NR70
PFOS (Surrogate Recovery)		%	80	77	88	137	NR70
PFOSA (Surrogate Recovery)		%	70	81	84	95	NR70
N-MeFOSA (Surrogate Recovery)		%	32	64	85	60	NR70
N-EtFOSA (Surrogate Recovery)		%	93	61	56	98	NR70
N-MeFOSAA (Surrogate Recovery)		%	61	86	76	96	NR70
N-EtFOSAA (Surrogate Recovery)		%	70	72	69	77	NR70
N-MeFOSE (Surrogate Recovery)		%	63	69	90	83	NR70
N-EtFOSE (Surrogate Recovery)		%	64	76	75	112	NR70
4:2 FTS (Surrogate Recovery)		%	71	55	113	66	NR70
6:2 FTS (Surrogate Recovery)		%	74	70	64	87	NR70
8:2 FTS (Surrogate Recovery)		%	49	77	61	75	NR70
8:2 diPAP (Surrogate Recovery)		%	24	32	29	71	NR70
Dates							
Date extracted			6-MAR-2019	6-MAR-2019	6-MAR-2019	6-MAR-2019	
Date analysed			6-MAR-2019	6-MAR-2019	6-MAR-2019	6-MAR-2019	

N19/005348

to
N19/005355:
PFOS is quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.
Selected PFAS surrogate recoveries are biased due to matrix effects.



Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

07-MAR-2019

REPORT OF ANALYSIS

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/190228
	LEVEL 8	**Quote No.**	: QT-02129
	540 WICKHAM STREET	**Order No.**	: 60588844_1_04
		Date Received	: 28-FEB-2019
Attention	: CARINA JAKOBI	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Richard Coghlan	**Phone**	: 02 9449 0161

Lab Reg No.	Sample Ref	Sample Description
N19/005352	QC205_190223	WATER
N19/005353	QC206_190223	WATER
N19/005354	QC207_190223	WATER

Lab Reg No.			N19/005352	N19/005353	N19/005354		
Date Sampled			23-FEB-2019	23-FEB-2019	23-FEB-2019		
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
PFBA (375-22-4)		ug/L	<0.005	<0.005	<0.005		NR70
PFPeA (2706-90-3)		ug/L	<0.002	<0.002	<0.002		NR70
PFHxA (307-24-4)		ug/L	<0.001	<0.001	<0.001		NR70
PFHpA (375-85-9)		ug/L	<0.001	<0.001	<0.001		NR70
PFOA (335-67-1)		ug/L	<0.001	<0.001	<0.001		NR70
PFNA (375-95-1)		ug/L	<0.001	<0.001	<0.001		NR70
PFDA (335-76-2)		ug/L	<0.001	<0.001	<0.001		NR70
PFUdA (2058-94-8)		ug/L	<0.001	<0.001	<0.001		NR70
PFDoA (307-55-1)		ug/L	<0.001	<0.001	<0.001		NR70
PFTrDA (72629-94-8)		ug/L	<0.002	<0.002	<0.002		NR70
PFTeDA (376-06-7)		ug/L	<0.002	<0.002	<0.002		NR70
PFHxDA (67905-19-5)		ug/L	<0.002	<0.002	<0.002		NR70
PFODA (16517-11-6)		ug/L	<0.005	<0.005	<0.005		NR70
FOUEA (70887-84-2)		ug/L	<0.001	<0.001	<0.001		NR70
PFBS (375-73-5)		ug/L	<0.001	<0.001	<0.001		NR70
PFPeS (2706-91-4)		ug/L	<0.001	<0.001	<0.001		NR70
PFHxS (355-46-4)		ug/L	0.0016	<0.001	<0.001		NR70
PFHpS (375-92-8)		ug/L	<0.001	<0.001	<0.001		NR70
PFOS (1763-23-1)		ug/L	0.0021	<0.002	<0.002		NR70
PFNS (68259-12-1)		ug/L	<0.001	<0.001	<0.001		NR70
PFDS (335-77-3)		ug/L	<0.001	<0.001	<0.001		NR70
PFOSA (754-91-6)		ug/L	<0.001	<0.001	<0.001		NR70
N-MeFOSA (31506-32-8)		ug/L	<0.002	<0.002	<0.002		NR70
N-EtFOSA (4151-50-2)		ug/L	<0.002	<0.002	<0.002		NR70
N-MeFOSAA (2355-31-9)		ug/L	<0.002	<0.002	<0.002		NR70
N-EtFOSAA(2991-50-6)		ug/L	<0.002	<0.002	<0.002		NR70
N-MeFOSE (24448-09-7)		ug/L	<0.005	<0.005	<0.005		NR70

REPORT OF ANALYSIS

Lab Reg No.			N19/005352	N19/005353	N19/005354		
Date Sampled			23-FEB-2019	23-FEB-2019	23-FEB-2019		
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)		ug/L	<0.005	<0.005	<0.005		NR70
4:2 FTS (757124-72-4)		ug/L	<0.001	<0.001	<0.001		NR70
6:2 FTS (27619-97-2)		ug/L	<0.001	<0.001	<0.001		NR70
8:2 FTS (39108-34-4)		ug/L	<0.001	<0.001	<0.001		NR70
10:2 FTS (120226-60-0)		ug/L	<0.001	<0.001	<0.001		NR70
8:2 diPAP (678-41-1)		ug/L	<0.002	<0.002	<0.002		NR70
PFBA (Surrogate Recovery)		%	103	98	104		NR70
PFPeA (Surrogate Recovery)		%	106	95	104		NR70
PFHxA (Surrogate Recovery)		%	111	107	110		NR70
PFHpA (Surrogate Recovery)		%	111	113	104		NR70
PFOA (Surrogate Recovery)		%	106	106	104		NR70
PFNA (Surrogate Recovery)		%	89	94	116		NR70
PFDA (Surrogate Recovery)		%	83	79	96		NR70
PFUdA (Surrogate Recovery)		%	81	61	90		NR70
PFDoA (Surrogate Recovery)		%	59	57	95		NR70
PFTeDA (Surrogate Recovery)		%	77	62	86		NR70
PFHxDA (Surrogate Recovery)		%	82	57	55		NR70
FOUEA (Surrogate Recovery)		%	82	83	85		NR70
PFBS (Surrogate Recovery)		%	105	116	102		NR70
PFHxS (Surrogate Recovery)		%	104	106	111		NR70
PFOS (Surrogate Recovery)		%	98	73	79		NR70
PFOSA (Surrogate Recovery)		%	73	64	97		NR70
N-MeFOSA (Surrogate Recovery)		%	48	38	61		NR70
N-EtFOSA (Surrogate Recovery)		%	61	36	46		NR70
N-MeFOSAA (Surrogate Recovery)		%	54	56	95		NR70
N-EtFOSAA (Surrogate Recovery)		%	65	44	81		NR70
N-MeFOSE (Surrogate Recovery)		%	61	71	80		NR70
N-EtFOSE (Surrogate Recovery)		%	63	59	87		NR70
4:2 FTS (Surrogate Recovery)		%	53	76	70		NR70
6:2 FTS (Surrogate Recovery)		%	68	56	64		NR70
8:2 FTS (Surrogate Recovery)		%	40	57	55		NR70
8:2 diPAP (Surrogate Recovery)		%	38	35	33		NR70
Dates							
Date extracted			6-MAR-2019	6-MAR-2019	6-MAR-2019		
Date analysed			6-MAR-2019	6-MAR-2019	6-MAR-2019		

REPORT OF ANALYSIS

Lab Reg No.			N19/005352	N19/005353	N19/005354		
Date Sampled			23-FEB-2019	23-FEB-2019	23-FEB-2019		
		Units					Method



Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

07-MAR-2019

ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) tested.

This Report supersedes reports: *RN1224643*

Measurement Uncertainty is available upon request.

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO6/190228 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	<0.002	NA	NA	NA	146	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	120	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	156	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	98	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	59	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	108	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	55	NA
PFUdA (2058-94-8)	NR70	0.002	<0.002	NA	NA	NA	88	NA
PFDoA (307-55-1)	NR70	0.002	<0.002	NA	NA	NA	118	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	88	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	104	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	78	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	82	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	80	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	124	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	88	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	92	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	88	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	85	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	76	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	94	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	116	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	140	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	98	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	104	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	92	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	66	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	64	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	88	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	98	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	66	NA
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	NA	NA	NA	76	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	95	NA

Results expressed in percentage (%) or mg/kg wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **7/03/2019**

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/190228 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.005	<0.005	NA	NA	NA	107	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	105	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	99	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	101	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	98	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	84	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	94	NA
PFUdA (2058-94-8)	NR70	0.001	<0.001	NA	NA	NA	92	NA
PFDoA (307-55-1)	NR70	0.001	<0.001	NA	NA	NA	111	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	95	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	95	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	99	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	49	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	96	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	103	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	96	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	102	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	100	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	104	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	98	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	84	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	104	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	86	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	98	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	102	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	97	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	104	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	86	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	103	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	100	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	85	NA
10:2 FTS (120226-60-0)	NR70	0.001	<0.001	NA	NA	NA	94	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	90	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **7/03/2019**