Maxxam
A Bureau Veritas Group Company

Your Project #: PFC
Site Location: BFTA
Your C.O.C. #: 609872-01-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2017/08/25
Report #: R4675519
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7H7648
Received: 2017/08/17, 14:00

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water by SPE/LCMS (1)	5	2017/08/22	2017/08/24	CAM SOP-00894	EPA 537 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.

Encryption Key

Stephanie Pollen
Project Manager
25 Aug 2017 14:27:33

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Stephanie Pollen, Project Manager
Email: SPollen@maxxam.ca
Phone# (905) 817-5700

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B7H7648
Report Date: 2017/08/25

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA
Sampler Initials: SM

RESULTS OF ANALYSES OF WATER

Maxxam ID		EYQ415			EYQ416			
Sampling Date		2017/08/16 10:00			2017/08/16 13:00			
COC Number		609872-01-01			609872-01-01			
	UNITS	**OW-8A**	**RDL**	**MDL**	**INFLUENT PRW-4**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters								
6:2 Fluorotelomer sulfonate	ug/L	0.087	0.019	0.0030	0.51	0.019	0.0030	5129855
8:2 Fluorotelomer sulfonate	ug/L	0.048	0.019	0.0034	0.14	0.019	0.0034	5129855
N-ethylperfluorooctane sulfonamide	ug/L	<0.0055	0.019	0.0055	<0.0055	0.019	0.0055	5129855
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0060	0.019	0.0060	<0.0060	0.019	0.0060	5129855
N-methylperfluorooctane sulfonamide	ug/L	<0.0039	0.019	0.0039	<0.0039	0.019	0.0039	5129855
N-methylperfluorooctanesulfonamidol	ug/L	<0.0041	0.019	0.0041	<0.0041	0.019	0.0041	5129855
Perfluorobutane Sulfonate (PFBS)	ug/L	0.016	0.019	0.0046	0.049	0.019	0.0046	5129855
Perfluorobutanoic acid	ug/L	0.034	0.019	0.0041	0.055	0.019	0.0041	5129855
Perfluorodecane Sulfonate	ug/L	<0.0044	0.019	0.0044	<0.0044	0.019	0.0044	5129855
Perfluorodecanoic Acid (PFDA)	ug/L	0.012	0.019	0.0038	0.013	0.019	0.0038	5129855
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0027	0.019	0.0027	<0.0027	0.019	0.0027	5129855
Perfluoroheptane sulfonate	ug/L	0.015	0.019	0.0046	0.065	0.019	0.0046	5129855
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.077	0.019	0.0031	0.10	0.019	0.0031	5129855
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.41	0.019	0.0032	0.73	0.019	0.0032	5129855
Perfluorohexanoic Acid (PFHxA)	ug/L	0.13	0.019	0.0028	0.26	0.019	0.0028	5129855
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.12	0.019	0.0044	0.11	0.019	0.0044	5129855
Perfluorononanoic Acid (PFNA)	ug/L	0.075	0.019	0.0036	0.075	0.019	0.0036	5129855
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.029	0.019	0.0034	0.013	0.019	0.0034	5129855
Perfluorooctane Sulfonate (PFOS)	ug/L	0.77	0.019	0.0025	3.0 (1)	0.20	0.026	5129855
Perfluoropentanoic Acid (PFPeA)	ug/L	0.13	0.019	0.0026	0.20	0.019	0.0026	5129855
Perfluorotetradecanoic Acid	ug/L	<0.0036	0.019	0.0036	<0.0036	0.019	0.0036	5129855
Perfluorotridecanoic Acid	ug/L	<0.0031	0.019	0.0031	<0.0031	0.019	0.0031	5129855
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.093	0.019	0.0041	0.076	0.019	0.0041	5129855
Surrogate Recovery (%)								
13C2-6:2 Fluorotelomer sulfonate	%	88	N/A	N/A	88	N/A	N/A	5129855
13C2-8:2 Fluorotelomer sulfonate	%	100	N/A	N/A	78	N/A	N/A	5129855
13C2-Perfluorodecanoic acid	%	98	N/A	N/A	83	N/A	N/A	5129855
13C2-Perfluorododecanoic acid	%	77	N/A	N/A	76	N/A	N/A	5129855
13C2-Perfluorohexanoic acid	%	95	N/A	N/A	85	N/A	N/A	5129855
13C2-perfluorotetradecanoic acid	%	83	N/A	N/A	74	N/A	N/A	5129855
13C2-Perfluoroundecanoic acid	%	88	N/A	N/A	76	N/A	N/A	5129855

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to high concentration of the target analyte, a reduced sample volume was extracted and analyzed. Detection limit was adjusted accordingly (10x).

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Maxxam Job #: B7H7648
Report Date: 2017/08/25

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA
Sampler Initials: SM

RESULTS OF ANALYSES OF WATER

Maxxam ID		EYQ415			EYQ416			
Sampling Date		2017/08/16 10:00			2017/08/16 13:00			
COC Number		609872-01-01			609872-01-01			
	UNITS	**OW-8A**	**RDL**	**MDL**	**INFLUENT PRW-4**	**RDL**	**MDL**	**QC Batch**
13C4-Perfluorobutanoic acid	%	83	N/A	N/A	83	N/A	N/A	5129855
13C4-Perfluoroheptanoic acid	%	97	N/A	N/A	86	N/A	N/A	5129855
13C4-Perfluorooctanesulfonate	%	87	N/A	N/A	99	N/A	N/A	5129855
13C4-Perfluorooctanoic acid	%	100	N/A	N/A	85	N/A	N/A	5129855
13C5-Perfluorononanoic acid	%	93	N/A	N/A	81	N/A	N/A	5129855
13C5-Perfluoropentanoic acid	%	85	N/A	N/A	86	N/A	N/A	5129855
13C8-Perfluorooctane Sulfonamide	%	87	N/A	N/A	77	N/A	N/A	5129855
18O2-Perfluorohexanesulfonate	%	86	N/A	N/A	83	N/A	N/A	5129855
N-ethyl-d5-perfluorooctane sulfonam	%	78	N/A	N/A	73	N/A	N/A	5129855
N-methyl-d3-perfluorooctane sulfona	%	79	N/A	N/A	80	N/A	N/A	5129855

RDL = Reportable Detection Limit
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Cape Cod Comission
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RESULTS OF ANALYSES OF WATER

Maxxam ID		EYQ417	EYQ418			EYQ419			
Sampling Date		2017/08/16 13:00	2017/08/16 13:00			2017/08/16 13:15			
COC Number		609872-01-01	609872-01-01			609872-01-01			
	UNITS	**MIDPOINT**	**EFFLUENT**	**RDL**	**MDL**	**POND-FRP**	**RDL**	**MDL**	**QC Batch**
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/L	<0.0029	<0.0029	0.018	0.0029	0.0089	0.019	0.0030	5129855
8:2 Fluorotelomer sulfonate	ug/L	<0.0032	<0.0032	0.018	0.0032	0.0087	0.019	0.0034	5129855
N-ethylperfluorooctane sulfonamide	ug/L	<0.0052	<0.0052	0.018	0.0052	<0.0055	0.019	0.0055	5129855
N-ethylperfluorooctane sulfonamidoe	ug/L	<0.0057	<0.0057	0.018	0.0057	<0.0060	0.019	0.0060	5129855
N-methylperfluorooctane sulfonamide	ug/L	<0.0037	<0.0037	0.018	0.0037	<0.0039	0.019	0.0039	5129855
N-methylperfluorooctanesulfonamidol	ug/L	<0.0039	<0.0039	0.018	0.0039	<0.0041	0.019	0.0041	5129855
Perfluorobutane Sulfonate (PFBS)	ug/L	<0.0043	<0.0043	0.018	0.0043	0.025	0.019	0.0046	5129855
Perfluorobutanoic acid	ug/L	<0.0039	<0.0039	0.018	0.0039	0.041	0.019	0.0041	5129855
Perfluorodecane Sulfonate	ug/L	<0.0041	<0.0041	0.018	0.0041	0.0088	0.019	0.0044	5129855
Perfluorodecanoic Acid (PFDA)	ug/L	<0.0036	<0.0036	0.018	0.0036	0.043	0.019	0.0038	5129855
Perfluorododecanoic Acid (PFDoA)	ug/L	<0.0025	<0.0025	0.018	0.0025	<0.0027	0.019	0.0027	5129855
Perfluoroheptane sulfonate	ug/L	<0.0043	<0.0043	0.018	0.0043	0.029	0.019	0.0046	5129855
Perfluoroheptanoic Acid (PFHpA)	ug/L	<0.0030	<0.0030	0.018	0.0030	0.12	0.019	0.0031	5129855
Perfluorohexane Sulfonate (PFHxS)	ug/L	<0.0031	<0.0031	0.018	0.0031	0.26	0.019	0.0032	5129855
Perfluorohexanoic Acid (PFHxA)	ug/L	<0.0026	<0.0026	0.018	0.0026	0.23	0.019	0.0028	5129855
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	<0.0041	<0.0041	0.018	0.0041	0.092	0.019	0.0044	5129855
Perfluorononanoic Acid (PFNA)	ug/L	<0.0034	<0.0034	0.018	0.0034	0.13	0.019	0.0036	5129855
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0032	<0.0032	0.018	0.0032	<0.0034	0.019	0.0034	5129855
Perfluorooctane Sulfonate (PFOS)	ug/L	<0.0023	<0.0023	0.018	0.0023	2.0 (1)	0.20	0.026	5129855
Perfluoropentanoic Acid (PFPeA)	ug/L	<0.0024	<0.0024	0.018	0.0024	0.16	0.019	0.0026	5129855
Perfluorotetradecanoic Acid	ug/L	<0.0034	<0.0034	0.018	0.0034	<0.038 (2)	0.20	0.038	5129855
Perfluorotridecanoic Acid	ug/L	<0.0030	<0.0030	0.018	0.0030	<0.033 (2)	0.20	0.033	5129855
Perfluoroundecanoic Acid (PFUnA)	ug/L	<0.0039	<0.0039	0.018	0.0039	0.067	0.019	0.0041	5129855
Surrogate Recovery (%)									
13C2-6:2 Fluorotelomer sulfonate	%	108	108	N/A	N/A	83	N/A	N/A	5129855
13C2-8:2 Fluorotelomer sulfonate	%	108	96	N/A	N/A	94	N/A	N/A	5129855
13C2-Perfluorodecanoic acid	%	96	92	N/A	N/A	92	N/A	N/A	5129855
13C2-Perfluorododecanoic acid	%	90	83	N/A	N/A	74	N/A	N/A	5129855

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Due to high concentration of the target analyte, a reduced sample volume was extracted and analyzed. Detection limit was adjusted accordingly (10x).

(2) Due to matrix interference, the extracted internal standard analyte exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compound. A reduced sample volume was extracted and analyzed. Detection limit was adjusted accordingly (10x).

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Maxxam Job #: B7H7648
Report Date: 2017/08/25

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA
Sampler Initials: SM

RESULTS OF ANALYSES OF WATER

Maxxam ID		EYQ417	EYQ418			EYQ419			
Sampling Date		2017/08/16 13:00	2017/08/16 13:00			2017/08/16 13:15			
COC Number		609872-01-01	609872-01-01			609872-01-01			
	UNITS	**MIDPOINT**	**EFFLUENT**	**RDL**	**MDL**	**POND-FRP**	**RDL**	**MDL**	**QC Batch**
13C2-Perfluorohexanoic acid	%	91	98	N/A	N/A	93	N/A	N/A	5129855
13C2-perfluorotetradecanoic acid	%	76	60	N/A	N/A	61	N/A	N/A	5129855
13C2-Perfluoroundecanoic acid	%	94	90	N/A	N/A	83	N/A	N/A	5129855
13C4-Perfluorobutanoic acid	%	96	102	N/A	N/A	92	N/A	N/A	5129855
13C4-Perfluoroheptanoic acid	%	94	103	N/A	N/A	94	N/A	N/A	5129855
13C4-Perfluorooctanesulfonate	%	105	98	N/A	N/A	86	N/A	N/A	5129855
13C4-Perfluorooctanoic acid	%	97	101	N/A	N/A	102	N/A	N/A	5129855
13C5-Perfluorononanoic acid	%	97	102	N/A	N/A	89	N/A	N/A	5129855
13C5-Perfluoropentanoic acid	%	98	100	N/A	N/A	97	N/A	N/A	5129855
13C8-Perfluorooctane Sulfonamide	%	93	89	N/A	N/A	89	N/A	N/A	5129855
18O2-Perfluorohexanesulfonate	%	97	97	N/A	N/A	104	N/A	N/A	5129855
N-ethyl-d5-perfluorooctane sulfonam	%	82	87	N/A	N/A	82	N/A	N/A	5129855
N-methyl-d3-perfluorooctane sulfona	%	100	97	N/A	N/A	84	N/A	N/A	5129855

RDL = Reportable Detection Limit
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N/A = Not Applicable

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Maxxam Job #: B7H7648
Report Date: 2017/08/25

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA
Sampler Initials: SM

TEST SUMMARY

Maxxam ID: EYQ415 **Collected:** 2017/08/16
Sample ID: OW-8A **Shipped:**
Matrix: Water **Received:** 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5129855	2017/08/22	2017/08/24	Anjan Desai

Maxxam ID: EYQ416 **Collected:** 2017/08/16
Sample ID: INFLUENT PRW-4 **Shipped:**
Matrix: Water **Received:** 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5129855	2017/08/22	2017/08/24	Anjan Desai

Maxxam ID: EYQ417 **Collected:** 2017/08/16
Sample ID: MIDPOINT **Shipped:**
Matrix: Water **Received:** 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5129855	2017/08/22	2017/08/24	Anjan Desai

Maxxam ID: EYQ418 **Collected:** 2017/08/16
Sample ID: EFFLUENT **Shipped:**
Matrix: Water **Received:** 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5129855	2017/08/22	2017/08/24	Anjan Desai

Maxxam ID: EYQ419 **Collected:** 2017/08/16
Sample ID: POND-FRP **Shipped:**
Matrix: Water **Received:** 2017/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5129855	2017/08/22	2017/08/24	Anjan Desai

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Maxxam Job #: B7H7648
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GENERAL COMMENTS

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5129855	AD9	Matrix Spike	13C2-6:2 Fluorotelomer sulfonate	2017/08/24		98	%	50 - 150
			13C2-8:2 Fluorotelomer sulfonate	2017/08/24		87	%	50 - 150
			13C2-Perfluorodecanoic acid	2017/08/24		99	%	50 - 150
			13C2-Perfluorododecanoic acid	2017/08/24		90	%	50 - 150
			13C2-Perfluorohexanoic acid	2017/08/24		99	%	50 - 150
			13C2-perfluorotetradecanoic acid	2017/08/24		88	%	50 - 150
			13C2-Perfluoroundecanoic acid	2017/08/24		93	%	50 - 150
			13C4-Perfluorobutanoic acid	2017/08/24		98	%	50 - 150
			13C4-Perfluoroheptanoic acid	2017/08/24		103	%	50 - 150
			13C4-Perfluorooctanesulfonate	2017/08/24		115	%	50 - 150
			13C4-Perfluorooctanoic acid	2017/08/24		97	%	50 - 150
			13C5-Perfluorononanoic acid	2017/08/24		103	%	50 - 150
			13C5-Perfluoropentanoic acid	2017/08/24		95	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2017/08/24		79	%	50 - 150
			18O2-Perfluorohexanesulfonate	2017/08/24		95	%	50 - 150
			6:2 Fluorotelomer sulfonate	2017/08/24		117	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/08/24		132 (1)	%	70 - 130
			N-ethyl-d5-perfluorooctane sulfonam	2017/08/24		80	%	50 - 150
			N-ethylperfluorooctane sulfonamide	2017/08/24		114	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/08/24		112	%	70 - 130
			N-methyl-d3-perfluorooctane sulfona	2017/08/24		79	%	50 - 150
			N-methylperfluorooctane sulfonamide	2017/08/24		131 (1)	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/08/24		115	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/08/24		129	%	70 - 130
			Perfluorobutanoic acid	2017/08/24		108	%	70 - 130
			Perfluorodecane Sulfonate	2017/08/24		98	%	70 - 130
			Perfluoroheptane sulfonate	2017/08/24		115	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/08/24		117	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/08/24		122	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/08/24		119	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/08/24		110	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/08/24		124	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/08/24		120	%	70 - 130
			Perfluorotetradecanoic Acid	2017/08/24		120	%	70 - 130
			Perfluorotridecanoic Acid	2017/08/24		120	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/08/24		121	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/08/24		110	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/08/24		107	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/08/24		124	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/08/24		100	%	70 - 130
5129855	AD9	Spiked Blank	13C2-6:2 Fluorotelomer sulfonate	2017/08/24		93	%	50 - 150
			13C2-8:2 Fluorotelomer sulfonate	2017/08/24		91	%	50 - 150
			13C2-Perfluorodecanoic acid	2017/08/24		88	%	50 - 150
			13C2-Perfluorododecanoic acid	2017/08/24		90	%	50 - 150
			13C2-Perfluorohexanoic acid	2017/08/24		91	%	50 - 150
			13C2-perfluorotetradecanoic acid	2017/08/24		80	%	50 - 150
			13C2-Perfluoroundecanoic acid	2017/08/24		84	%	50 - 150
			13C4-Perfluorobutanoic acid	2017/08/24		90	%	50 - 150
			13C4-Perfluoroheptanoic acid	2017/08/24		90	%	50 - 150
			13C4-Perfluorooctanesulfonate	2017/08/24		96	%	50 - 150
			13C4-Perfluorooctanoic acid	2017/08/24		89	%	50 - 150
			13C5-Perfluorononanoic acid	2017/08/24		90	%	50 - 150

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Client Project #: PFC
Site Location: BFTA
Sampler Initials: SM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C5-Perfluoropentanoic acid	2017/08/24		90	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2017/08/24		80	%	50 - 150
			18O2-Perfluorohexanesulfonate	2017/08/24		86	%	50 - 150
			6:2 Fluorotelomer sulfonate	2017/08/24		114	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/08/24		116	%	70 - 130
			N-ethyl-d5-perfluorooctane sulfonam	2017/08/24		83	%	50 - 150
			N-ethylperfluorooctane sulfonamide	2017/08/24		112	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/08/24		120	%	70 - 130
			N-methyl-d3-perfluorooctane sulfona	2017/08/24		87	%	50 - 150
			N-methylperfluorooctane sulfonamide	2017/08/24		117	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/08/24		120	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/08/24		121	%	70 - 130
			Perfluorobutanoic acid	2017/08/24		117	%	70 - 130
			Perfluorodecane Sulfonate	2017/08/24		111	%	70 - 130
			Perfluoroheptane sulfonate	2017/08/24		119	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/08/24		120	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/08/24		125	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/08/24		118	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/08/24		112	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/08/24		129	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/08/24		115	%	70 - 130
			Perfluorotetradecanoic Acid	2017/08/24		121	%	70 - 130
			Perfluorotridecanoic Acid	2017/08/24		127	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/08/24		127	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/08/24		115	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/08/24		108	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/08/24		118	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/08/24		108	%	70 - 130
5129855	AD9	Method Blank	13C2-6:2 Fluorotelomer sulfonate	2017/08/24		92	%	50 - 150
			13C2-8:2 Fluorotelomer sulfonate	2017/08/24		101	%	50 - 150
			13C2-Perfluorodecanoic acid	2017/08/24		90	%	50 - 150
			13C2-Perfluorododecanoic acid	2017/08/24		85	%	50 - 150
			13C2-Perfluorohexanoic acid	2017/08/24		96	%	50 - 150
			13C2-perfluorotetradecanoic acid	2017/08/24		82	%	50 - 150
			13C2-Perfluoroundecanoic acid	2017/08/24		90	%	50 - 150
			13C4-Perfluorobutanoic acid	2017/08/24		91	%	50 - 150
			13C4-Perfluoroheptanoic acid	2017/08/24		91	%	50 - 150
			13C4-Perfluorooctanesulfonate	2017/08/24		103	%	50 - 150
			13C4-Perfluorooctanoic acid	2017/08/24		101	%	50 - 150
			13C5-Perfluorononanoic acid	2017/08/24		86	%	50 - 150
			13C5-Perfluoropentanoic acid	2017/08/24		96	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2017/08/24		91	%	50 - 150
			18O2-Perfluorohexanesulfonate	2017/08/24		97	%	50 - 150
			6:2 Fluorotelomer sulfonate	2017/08/24	<0.0032		ug/L	
			8:2 Fluorotelomer sulfonate	2017/08/24	<0.0036		ug/L	
			N-ethyl-d5-perfluorooctane sulfonam	2017/08/24		69	%	50 - 150
			N-ethylperfluorooctane sulfonamide	2017/08/24	<0.0058		ug/L	
			N-ethylperfluorooctane sulfonamidoe	2017/08/24	<0.0063		ug/L	
			N-methyl-d3-perfluorooctane sulfona	2017/08/24		76	%	50 - 150
			N-methylperfluorooctane sulfonamide	2017/08/24	<0.0041		ug/L	
			N-methylperfluorooctanesulfonamidol	2017/08/24	<0.0043		ug/L	
			Perfluorobutane Sulfonate (PFBS)	2017/08/24	<0.0048		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutanoic acid	2017/08/24	<0.0043		ug/L	
			Perfluorodecane Sulfonate	2017/08/24	<0.0046		ug/L	
			Perfluoroheptane sulfonate	2017/08/24	<0.0048		ug/L	
			Perfluoroheptanoic Acid (PFHpA)	2017/08/24	<0.0033		ug/L	
			Perfluorohexane Sulfonate (PFHxS)	2017/08/24	<0.0034		ug/L	
			Perfluorohexanoic Acid (PFHxA)	2017/08/24	<0.0029		ug/L	
			Perfluorononanoic Acid (PFNA)	2017/08/24	<0.0038		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2017/08/24	<0.0036		ug/L	
			Perfluoropentanoic Acid (PFPeA)	2017/08/24	<0.0027		ug/L	
			Perfluorotetradecanoic Acid	2017/08/24	<0.0038		ug/L	
			Perfluorotridecanoic Acid	2017/08/24	<0.0033		ug/L	
			Perfluoroundecanoic Acid (PFUnA)	2017/08/24	<0.0043		ug/L	
			Perfluorodecanoic Acid (PFDA)	2017/08/24	<0.0040		ug/L	
			Perfluorododecanoic Acid (PFDoA)	2017/08/24	<0.0028		ug/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2017/08/24	<0.0046		ug/L	
			Perfluorooctane Sulfonate (PFOS)	2017/08/24	<0.0026		ug/L	
5129855	AD9	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonate	2017/08/24	NC		%	30
			8:2 Fluorotelomer sulfonate	2017/08/24	NC		%	30
			N-ethylperfluorooctane sulfonamide	2017/08/24	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2017/08/24	NC		%	30
			N-methylperfluorooctane sulfonamide	2017/08/24	NC		%	30
			N-methylperfluorooctanesulfonamidol	2017/08/24	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2017/08/24	13		%	30
			Perfluorobutanoic acid	2017/08/24	20		%	30
			Perfluorodecane Sulfonate	2017/08/24	NC		%	30
			Perfluoroheptane sulfonate	2017/08/24	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2017/08/24	15		%	30
			Perfluorohexane Sulfonate (PFHxS)	2017/08/24	22		%	30
			Perfluorohexanoic Acid (PFHxA)	2017/08/24	25		%	30
			Perfluorononanoic Acid (PFNA)	2017/08/24	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2017/08/24	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2017/08/24	19		%	30
			Perfluorotetradecanoic Acid	2017/08/24	NC		%	30
			Perfluorotridecanoic Acid	2017/08/24	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2017/08/24	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2017/08/24	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2017/08/24	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2017/08/24	9.7		%	30
			Perfluorooctane Sulfonate (PFOS)	2017/08/24	12		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery of the matrix spike was above the upper control limit. Laboratory spiked water resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Colm McNamara, Senior Analyst, Liquid Chromatography

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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