

ANALYTICAL RESULTS

Sample ID: Method Blank						PFAS Isotope Dilution Method					
Client Data Name: SKOOKUM Contract Services Project: PFC Monthly Sampling - FY19 Sep						Laboratory Data Lab Sample: B9I0195-BLK1 Column: BEH C18					
Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFHxA	307-24-4	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFHpA	375-85-9	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFHxS	355-46-4	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFOA	335-67-1	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFNA	375-95-1	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFOS	1763-23-1	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFDA	335-76-2	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
MeFOSAA	2355-31-9	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
EtFOSAA	2991-50-6	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFUnA	2058-94-8	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFDaA	307-55-1	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFTDA	72629-94-8	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
PFTeDA	376-06-7	ND	2.74	4.00	8.00		B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
Labeled Standards	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	117		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C2-PFHxA	IS	95.9		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C4-PFHpA	IS	93.3		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C3-PFHxS	IS	87.3		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C5-PFNA	IS	84.7		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C2-PFOA	IS	86.0		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C8-PFOS	IS	85.8		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C2-PFDA	IS	110		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
d3-MeFOSAA	IS	78.9		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C2-PFUnA	IS	84.1		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
d5-EtFOSAA	IS	75.0		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C2-PFDaA	IS	110		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1
13C2-PFTeDA	IS	88.7		50 - 150			B9I0195	23-Sep-19	0.125 L	24-Sep-19 18:52	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: LCSD										PFAS Isotope Dilution Method						
Name: SKOOKUM Contract Services Project: PFC Monthly Sampling - FY19 Sep Matrix: Aqueous				Lab Sample: B9I0195-BS1/B9I0195-BSD1 QC Batch: B9I0195 Samp Size: 0.125/0.125 L				Date Extracted: 23-Sep-19 Column: BEH C18								
Analyte	CAS Number	LCS (ng/L)	LCS Spike	LCS % Rec	LCS Quals	LCSD (ng/L)	LCSD Spike	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	375-73-5	64.9	80.0	81.1		65.2	80.0	81.5	0.507		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFHxA	307-24-4	79.2	80.0	99.0		84.3	80.0	105	6.26		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFHpA	375-85-9	80.0	80.0	100		75.7	80.0	94.6	5.56		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFHxS	355-46-4	74.2	80.0	92.8		75.8	80.0	94.7	2.04		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFOA	335-67-1	83.5	80.0	104		81.1	80.0	101	2.81		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFNA	375-95-1	70.6	80.0	88.3		74.5	80.0	93.1	5.32		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFOS	1763-23-1	81.2	80.0	102		80.9	80.0	101	0.371		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFDA	335-76-2	90.4	80.0	113		84.2	80.0	105	7.08		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
MeFOSAA	2355-31-9	89.7	80.0	112		98.2	80.0	123	9.05		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
EtFOSAA	2991-50-6	85.3	80.0	107		84.0	80.0	105	1.57		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFUnA	2058-94-8	82.6	80.0	103		79.9	80.0	99.9	3.24		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFDoA	307-55-1	84.5	80.0	106		80.6	80.0	101	4.69		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFTrDA	72629-94-8	73.5	80.0	91.9		80.6	80.0	101	9.15		60-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
PFTeDA	376-06-7	78.7	80.0	98.4		81.5	80.0	102	3.55		70-130	30	24-Sep-19 18:31	1	24-Sep-19 18:42	1
Labeled Standards	Type			LCS % Rec	LCS Quals			LCSD % Rec		LCSD Quals	Limits		LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C3-PFBS	IS			135				122			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C2-PFHxA	IS			112				98.9			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C4-PFHpA	IS			103				95.7			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C3-PFHxS	IS			106				96.4			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C5-PFNA	IS			98.9				88.9			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C2-PFOA	IS			95.1				90.4			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C8-PFOS	IS			93.5				85.4			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C2-PFDA	IS			118				113			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
d3-MeFOSAA	IS			83.1				72.2			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C2-PFUnA	IS			91.7				87.9			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
d5-EtFOSAA	IS			76.7				76.6			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C2-PFDoA	IS			115				113			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1
13C2-PFTeDA	IS			84.1				84.0			50-150		24-Sep-19 18:31	1	24-Sep-19 18:42	1

Sample ID: PFC-AF-01-03-091719
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	SKOOKUM Contract Services	Matrix:	Aqueous	Lab Sample:	1903180-03	Column:	BEH C18
Project:	PFC Monthly Sampling - FY19 Sep	Date Collected:	17-Sep-19 14:45	Date Received:	19-Sep-19 10:28		
Location:	#3 E. Property Grid E13						

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	3.39	3.05	4.46	8.90	J	B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFHxA	307-24-4	14.1	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFHpA	375-85-9	5.46	3.05	4.46	8.90	J	B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFHxS	355-46-4	36.7	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFOA	335-67-1	20.3	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFNA	375-95-1	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFOS	1763-23-1	50.4	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFDA	335-76-2	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
MeFOSAA	2355-31-9	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
EtFOSAA	2991-50-6	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFUnA	2058-94-8	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFDaA	307-55-1	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFTDA	72629-94-8	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
PFTeDA	376-06-7	ND	3.05	4.46	8.90		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	127	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C2-PFHxA	IS	99.0	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C4-PFHpA	IS	91.6	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C3-PFHxS	IS	99.4	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C5-PFNA	IS	91.2	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C2-PFOA	IS	92.8	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C8-PFOS	IS	90.6	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C2-PFDA	IS	120	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
d3-MeFOSAA	IS	107	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C2-PFUnA	IS	84.4	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
d5-EtFOSAA	IS	106	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C2-PFDaA	IS	131	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1
13C2-PFTeDA	IS	143	50 - 150		B9I0195	23-Sep-19	0.112 L	24-Sep-19 19:24	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-23
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Massachusetts Department of Environmental Protection	N/A
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718-B
New Jersey Department of Environmental Protection	190001
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	016
Texas Commission on Environmental Quality	T104704189-19-10
Vermont Department of Health	VT-4042
Virginia Department of General Services	10272
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A