



**SUSTAINABLE ENVIRONMENT, ENERGY,
HEALTH & SAFETY PROFESSIONAL SERVICES**

April 22, 2019

NORTECH, Inc.

Accounting Office:
2400 College Rd
Fairbanks, AK 99709
907.452.5688
907.452.5694 Fax

3105 Lakeshore Drive
Suite A106
Anchorage, AK 99517
907.222.2445
907.222.0915 Fax

5438 Shaune Drive
Suite B
Juneau, AK 99801
907.586.6813
907.586.6819 Fax

www.nortechengr.com

RE: Spring 2019 - PFAS Groundwater Results

Thank you very much for participating in **NORTECH's** well search and initial groundwater assessment. The laboratory results of your groundwater sample detected two regulated per- and poly-fluoroalkyl substances (PFAS) **below** the current lifetime health advisory (LHA) level for these compounds. There is no action you need to take at this time.

Enclosed is the laboratory report for your well. Please reference Section 4 - "Report of Analysis" on Page 13 for the results of your groundwater analysis. The sum concentration of regulated PFAS compounds Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic Acid (PFOA) was 0.00926 micrograms per liter ($\mu\text{g/L}$). This combined result is below the current LHA.

The Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) have set an LHA level of 0.070 $\mu\text{g/L}$. The LHA of 0.070 $\mu\text{g/L}$ is for the sum of PFAS compounds PFOS and PFOA in drinking water.

As required by ADEC, we will be notifying ADEC of your laboratory test results. If you have any additional questions regarding the results of this report, please feel free to contact me or Julie Keener, at the **NORTECH** office, 907-452-5688, Monday through Friday, 8 am to 5 pm.

Again, thank you for participating in this groundwater assessment and we hope that you have a good summer.

Sincerely,
NORTECH

Scott Hummel
Chemist

Attached: SGS Work Order Laboratory Report: 1199071

Laboratory Report of Analysis

To: Nortech
2450 College Road
Fairbanks, AK 99709
(907)452-5688

Report Number: **1199071**

Client Project: **PFC Well Search NAPA-Van Horn**

Dear Scott Hummel,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



SGS North America Inc.
Environmental Services – Alaska Division
Project Manager

Justin Nelson
2019.03.15
09:38:58 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Nortech**
SGS Project: **1199071**
Project Name/Site: **PFC Well Search NAPA-Van Horn**
Project Contact: **Scott Hummel**

Refer to sample receipt form for information on sample condition.

██████████-01 (1199071001) PS

EPA 537- QSM 5.1 24 Compound List was analyzed by SGS of Orlando, FL.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 03/15/2019 8:38:49AM

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
██████████	1199071001	02/28/2019	03/01/2019	Water (Surface, Eff., Ground)
██████████	1199071002	02/28/2019	03/01/2019	Water (Surface, Eff., Ground)
Field Blank-01	1199071003	02/28/2019	03/01/2019	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1199071



Locations Nationwide
Alaska Maryland
New Jersey New York
North Carolina Indiana
West Virginia Kentucky
www.us.sgs.com

CLIENT: NORTECH					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page 1 of 1					
Section 1	CONTACT: Scott Hummel PHONE NO: 907-452-5688					Section 3												Preservative		
	PROJECT: PFC well search NAME: NAPA-Van Horn PERMIT#: 17-1001					CONTAINER	Type C = COMP G = GRAB MI = Multi Incremental Soils	PFCs by EPA 537	None											
	REPORTS TO: Scott Hummel E-MAIL: scott.hummel@hortechnology.com																			
	INVOICE TO: NORTECH QUOTE #: P.O. #: 17-1001																			
Section 2	RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	#												REMARKS/LOC ID		
			02/28/19	1110	WATER	Z	G	X												
			02/28/19	1112	WATER	Z	G	X												
		Field Blank-01	02/28/19	1114	WATER	Z	G	X										PFC-Free Water Field Blank *		
Section 5 4 of 43	Relinquished By: (1)		Date	Time	Received By:		2-28-19 1930		Section 4		DOD Project? Yes No		Data Deliverable Requirements:							
	Relinquished By: (2)		Date	Time	Received By:		2-28-19 1600		Cooler ID:		Requested Turnaround Time and/or Special Instructions: Standard TAT * PFC Free Water supplied by SGS. Run same list as 2018 1189850									
	Relinquished By: (3)		Date	Time	Received By:				Temp Blank °C: 2,3°C		Chain of Custody Seal: (Circle) INTACT BROKEN ASENT									
	Relinquished By: (4)		Date	Time	Received For Laboratory By:		3/1/19 1910		(See attached Sample Receipt Form)		(See attached Sample Receipt Form)									

ARC: 3.6
D56
CS: 1F/1B



FAIRBANKS SAMPLE RECEIPT FORM

Note: This form is to be completed by Fairbanks Receiving Staff for all samples

Review Criteria:	Condition:	Comments/Actions Taken
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No N/A Yes No N/A	Exemption permitted if sampler hand carries/delivers.
Temperature blank compliant* (i.e., 0-6°C) If >6°C, were samples collected <8 hours ago? If <0°C, were all sample containers ice free?	Yes No N/A Yes No N/A Yes No N/A	<input type="checkbox"/> Exemption permitted if chilled & collected <8hrs ago
Cooler ID: _____ @ _____ w/Therm. ID: _____ Cooler ID: _____ @ _____ w/Therm. ID: _____ Cooler ID: _____ @ _____ w/Therm. ID: _____ Cooler ID: _____ @ _____ w/Therm. ID: _____ Cooler ID: _____ @ _____ w/Therm. ID: _____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note ambient () or chilled (). Please check one.		Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.
Delivery Method: <u>Client</u> (hand carried) Other: _____	Tracking/AB# : Or see attached Or N/A	
→For samples received with payment, note amount (\$) and whether cash / check / CC (circle one) was received.		
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags <u>6</u> Vermiculite Other: _____	<u>Yes</u> No N/A	Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes No N/A	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No N/A Yes No N/A	
Additional notes (if applicable):		

Profile #: 362417

Note to Client: any "no" circled above indicates non-compliance with standard procedures and may impact data quality.



e-Sample Receipt Form

SGS Workorder #:

1199071



1 1 9 9 0 7 1

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1-F, 1-B
COC accompanied samples?	Yes	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 3.6 °C Therm. ID: D56
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A ***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1199071001-A	No Preservative Required	OK			
1199071001-B	No Preservative Required	OK			
1199071002-A	No Preservative Required	OK			
1199071002-B	No Preservative Required	OK			
1199071003-A	No Preservative Required	OK			
1199071003-B	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

SGS North America, Inc

1199071

SGS Job Number: FA62040

Sampling Date: 02/28/19

Report to:

SGS North America, Inc

julie.shumway@sgs.com

ATTN: Julie Shumway

Total number of pages in report: **36**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Andrea Colby 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001)
DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),
AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

This report shall not be reproduced, except in its entirety, without the written approval of SGS.

Test results relate only to samples analyzed.

Table of Contents

Sections:

1

2

3

4

5

6

-1-

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	4
Section 3: Summary of Hits	5
Section 4: Sample Results	6
4.1: FA62040-1: 3318 N VAN HORN-01	7
4.2: FA62040-2: 3318 N VAN HORN-02	9
4.3: FA62040-3: FIELD BLANK-01	11
Section 5: Misc. Forms	13
5.1: Chain of Custody	14
Section 6: MS Semi-volatiles - QC Data Summaries	16
6.1: Method Blank Summary	17
6.2: Blank Spike Summary	27
6.3: Matrix Spike Summary	31
6.4: Matrix Spike/Matrix Spike Duplicate Summary	33
6.5: Duplicate Summary	35



Sample Summary

SGS North America, Inc

Job No: FA62040

1199071

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
FA62040-1	02/28/19	11:10 JS	03/05/19	AQ	Water	[REDACTED]
FA62040-2	02/28/19	11:12 JS	03/05/19	AQ	Water	[REDACTED]
FA62040-3	02/28/19	11:14 JS	03/05/19	AQ	Field Blank Water	FIELD BLANK-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS North America, Inc

Job No FA62040

Site: 1199071

Report Date 3/13/2019 11:39:15

2 Samples and 1 Field Blank were collected on 02/28/2019 and were received at SGS North America Inc - Orlando on 03/05/2019 properly preserved, at 3.6 Deg. C and intact. These samples received an SGS Orlando job number of FA62040. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-volatiles By Method EPA 537M BY ID

Matrix: AQ

Batch ID: OP74054

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA62023-2MS, FA62024-1DUP were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Blank Spike Recovery(s) for Perfluorodecanesulfonic acid are outside control limits.

OP74054-BS for Perfluorodecanesulfonic acid: Sporadic marginal failure.

Matrix Spike Recovery(s) for Perfluorodecanesulfonic acid, Perfluorononanesulfonic acid are outside control limits.

Probable cause is due to matrix interference.

RPD(s) for Duplicate for Perfluoropentanesulfonic acid are outside control limits for sample OP74054-DUP. Probable cause is due to sample non-homogeneity.

FA62040-3 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits.

Matrix: AQ

Batch ID: OP74068

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA62099-2MS, FA62099-2MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Ariel Hartney, Client Services (*Signature on File*)

Summary of Hits

Job Number: FA62040
Account: SGS North America, Inc
Project: 1199071
Collected: 02/28/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

FA62040-1

Perfluoropentanoic acid		0.00557	0.0040		ug/l	EPA 537M BY ID
Perfluorohexanoic acid		0.00555	0.0040		ug/l	EPA 537M BY ID
Perfluorooctanoic acid		0.00405	0.0040		ug/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		0.00455	0.0040		ug/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		0.00510	0.0040		ug/l	EPA 537M BY ID

FA62040-2

Perfluoropentanoic acid		0.00643	0.0040		ug/l	EPA 537M BY ID
Perfluorohexanoic acid		0.00555	0.0040		ug/l	EPA 537M BY ID
Perfluorooctanoic acid		0.00401	0.0040		ug/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		0.00467	0.0040		ug/l	EPA 537M BY ID
Perfluorooctanesulfonic acid		0.00525	0.0040		ug/l	EPA 537M BY ID

FA62040-3 FIELD BLANK-01

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: [REDACTED]		Date Sampled: 02/28/19
Lab Sample ID: FA62040-1		Date Received: 03/05/19
Matrix: AQ - Water		Percent Solids: n/a
Method: EPA 537M BY ID EPA 537 MOD		
Project: 1199071		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q1763.D	1	03/11/19 15:12	NAF	03/08/19 10:00	OP74068	S3Q48
Run #2							

Run #1	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS					
375-22-4	Perfluorobutanoic acid	ND	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.00557	0.0040	ug/l	
307-24-4	Perfluorohexanoic acid	0.00555	0.0040	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	ug/l	
335-67-1	Perfluorooctanoic acid	0.00405	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	ug/l	
PERFLUOROALKYLSULFONATES					
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00455	0.0040	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00510	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	ug/l	
PERFLUOROCTANESULFONAMIDES					
754-91-6	PFOSA	ND	0.0040	ug/l	
PERFLUOROCTANESULFONAMIDOACETIC ACIDS					
2355-31-9	MeFOSAA	ND	0.020	ug/l	
2991-50-6	EtFOSAA	ND	0.020	ug/l	
FLUOROTELOMER SULFONATES					
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	

ND = Not detected	J = Indicates an estimated value
RL = Reporting Limit	B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range	N = Indicates presumptive evidence of a compound



Report of Analysis

Client Sample ID: ██████████	Date Sampled: 02/28/19
Lab Sample ID: FA62040-1	Date Received: 03/05/19
Matrix: AQ - Water	Percent Solids: n/a
Method: EPA 537M BY ID EPA 537 MOD	
Project: 1199071	

4.1
4

PFAS List

CAS No.	Compound	Result	RL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	93%		30-140%
	13C5-PFPeA	97%		40-140%
	13C5-PFHxA	100%		50-150%
	13C4-PFHpA	100%		50-150%
	13C8-PFOA	110%		50-150%
	13C9-PFNA	102%		50-150%
	13C6-PFDA	92%		50-150%
	13C7-PFUnDA	81%		50-150%
	13C2-PFDoDA	76%		50-150%
	13C2-PFTeDA	76%		40-150%
	13C3-PFBS	97%		50-150%
	13C3-PFHxS	98%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	89%		30-140%
	d3-MeFOSAA	81%		50-150%
	13C2-4:2FTS	97%		50-150%
	13C2-6:2FTS	106%		50-150%
	13C2-8:2FTS	93%		50-150%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: ██████████		Date Sampled: 02/28/19
Lab Sample ID: FA62040-2		Date Received: 03/05/19
Matrix: AQ - Water		Percent Solids: n/a
Method: EPA 537M BY ID EPA 537 MOD		
Project: 1199071		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q1764.D	1	03/11/19 15:27	NAF	03/08/19 10:00	OP74068	S3Q48
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS					
375-22-4	Perfluorobutanoic acid	ND	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	0.00643	0.0040	ug/l	
307-24-4	Perfluorohexanoic acid	0.00555	0.0040	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	ug/l	
335-67-1	Perfluorooctanoic acid	0.00401	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	ug/l	
PERFLUOROALKYLSULFONATES					
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00467	0.0040	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.00525	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	ug/l	
PERFLUOROCTANESULFONAMIDES					
754-91-6	PFOSA	ND	0.0040	ug/l	
PERFLUOROCTANESULFONAMIDOACETIC ACIDS					
2355-31-9	MeFOSAA	ND	0.020	ug/l	
2991-50-6	EtFOSAA	ND	0.020	ug/l	
FLUOROTELOMER SULFONATES					
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	

ND = Not detected	J = Indicates an estimated value
RL = Reporting Limit	B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range	N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID: [REDACTED]		Date Sampled: 02/28/19
Lab Sample ID: FA62040-2		Date Received: 03/05/19
Matrix: AQ - Water		Percent Solids: n/a
Method: EPA 537M BY ID EPA 537 MOD		
Project: 1199071		

4.2
4

PFAS List

CAS No.	Compound	Result	RL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	91%		30-140%
	13C5-PFPeA	95%		40-140%
	13C5-PFHxA	98%		50-150%
	13C4-PFHpA	97%		50-150%
	13C8-PFOA	106%		50-150%
	13C9-PFNA	99%		50-150%
	13C6-PFDA	87%		50-150%
	13C7-PFUnDA	75%		50-150%
	13C2-PFD _o DA	70%		50-150%
	13C2-PFTeDA	78%		40-150%
	13C3-PFBS	95%		50-150%
	13C3-PFHxS	95%		50-150%
	13C8-PFOS	83%		50-150%
	13C8-FOSA	85%		30-140%
	d3-MeFOSAA	77%		50-150%
	13C2-4:2FTS	95%		50-150%
	13C2-6:2FTS	105%		50-150%
	13C2-8:2FTS	88%		50-150%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FIELD BLANK-01	Date Sampled: 02/28/19
Lab Sample ID: FA62040-3	Date Received: 03/05/19
Matrix: AQ - Field Blank Water	Percent Solids: n/a
Method: EPA 537M BY ID EPA 537 MOD	
Project: 1199071	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q1676.D	1	03/07/19 21:03	NAF	03/06/19 09:00	OP74054	S3Q46
Run #2							

Run #	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS					
375-22-4	Perfluorobutanoic acid	ND	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	ug/l	
PERFLUOROALKYLSULFONATES					
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid ^a	ND	0.0040	ug/l	
PERFLUOROCTANESULFONAMIDES					
754-91-6	PFOSA	ND	0.0040	ug/l	
PERFLUOROCTANESULFONAMIDOACETIC ACIDS					
2355-31-9	MeFOSAA	ND	0.020	ug/l	
2991-50-6	EtFOSAA	ND	0.020	ug/l	
FLUOROTELOMER SULFONATES					
757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

4.3


Report of Analysis

Client Sample ID: FIELD BLANK-01	Date Sampled: 02/28/19
Lab Sample ID: FA62040-3	Date Received: 03/05/19
Matrix: AQ - Field Blank Water	Percent Solids: n/a
Method: EPA 537M BY ID EPA 537 MOD	
Project: 1199071	

4.3
4

PFAS List

CAS No.	Compound	Result	RL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	93%		30-140%
	13C5-PFPeA	97%		40-140%
	13C5-PFHxA	106%		50-150%
	13C4-PFHpA	112%		50-150%
	13C8-PFOA	123%		50-150%
	13C9-PFNA	115%		50-150%
	13C6-PFDA	98%		50-150%
	13C7-PFUnDA	99%		50-150%
	13C2-PFDODA	92%		50-150%
	13C2-PFTeDA	97%		40-150%
	13C3-PFBS	97%		50-150%
	13C3-PFHxS	91%		50-150%
	13C8-PFOS	70%		50-150%
	13C8-FOSA	88%		30-140%
	d3-MeFOSAA	104%		50-150%
	13C2-4:2FTS	106%		50-150%
	13C2-6:2FTS	132%		50-150%
	13C2-8:2FTS	109%		50-150%

(a) Associated BS recovery outside control limits.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



SGS North America Inc.
CHAIN OF CUSTODY RECORD



1 1 9 9 0 7 1

FA62040

Locations Nationwide

Alaska Florida
New Jersey Colorado
Texas North Carolina
Virginia Louisiana
www.us.sgs.com

CLIENT: SGS North America Inc. - Alaska Division				SGS Reference: SGS, FL				Page 1 of 1	
CONTACT: Julie Shumway PHONE NO: (907) 562-2343				Additional Comments: All soils report out in dry weight unless otherwise requested.					
PROJECT NAME: 1199071		PWSID#:		# C O N T A I N E R S Preserve: ative Used: TYPE C = COMP G = GRAB Multi incremental soils EPA 537 - DSM 5.1 24 Compound List	MS	MSO	SGS lab #	Location ID	
REPORTS TO:		E-MAIL: Julia.Shumway@sgs.com							
INVOICE TO:		QUOTE #:							
SGS - Alaska		P.O. #: 1199071							
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HHMM	MATRIX/MATRIX					
1		2/28/2019	11:10	Water	2	G =	X	1199071001	
2		2/28/2019	11:12	Water	2	G =	X	1199071002	
3	Field Blank-01	3/1/2019	11:14	Water	2	G =	X	1199071003	
Relinquished By: (1) <i>[Signature]</i>		Date: 3/4/2019	Time: 1115	Received By: <i>VPS</i>	DOD Project? NO Report to DL (J Flags)? NO		Data Deliverable Requirements:		
Relinquished By: (2) <i>VPS</i>		Date:	Time:	Received By:	Cooler ID:		Level 2 Report +DV EDD		
Relinquished By: (3)		Date:	Time:	Received By:	Requested Turnaround Time and-or Special Instructions:				
Relinquished By: (4)		Date:	Time:	Received For Laboratory By: <i>3/5/19</i> <i>1315</i>	Report all analyses for Soils/Waters in mg/L or mg/Kg, where possible		Chain of Custody Seal: (Circle)		
				Temp Blank °C: <u>3.6</u>		INTACT <input type="checkbox"/> BROKEN <input type="checkbox"/> ABSENT <input type="checkbox"/>			
				or Ambient <input type="checkbox"/>					

[X] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
 [] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms_and_conditions.htm

1199071_PFC_03.04.19.xls

5.1
5

SGS Sample Receipt Summary

Job Number: FA62040

Client: SGS ALASKA

Project: 1199071

Date / Time Received: 3/5/2019 1:15:00 PM

Delivery Method: UPS

Airbill #'s: 1za8619w0166092034

Therm ID: <u>IR 1;</u>	Therm CF: <u>-0.2;</u>	# of Coolers: <u>1</u>
Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);		
Cooler Temps (Corrected) °C: Cooler 1: (3.6);		

<u>Cooler Information</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Temp criteria achieved	<input checked="" type="checkbox"/>		<input type="checkbox"/>
4. Cooler temp verification	<u>IR Gun</u>		
5. Cooler media	<u>Ice (Bag)</u>		

<u>Sample Information</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Sample labels present on bottles	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Samples preserved properly	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
3. Sufficient volume/containers recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Condition of sample	<u>Intact</u>			
5. Sample recvd within HT	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
6. Dates/Times/IDs on COC match Sample Label	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
7. VOCs have headspace	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
9. Compositing instructions clear	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Voa Soil Kits/Jars received past 48hrs?	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. % Solids Jar received?	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Residual Chlorine Present?	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Trip Blank Information</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<u>W</u>	<u>or</u>	<u>S</u>	<u>N/A</u>
3. Type Of TB Received	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Misc. Information</u>			
Number of Encores: 25-Gram _____	5-Gram _____	Number of 5035 Field Kits: _____	Number of Lab Filtered Metals: _____
Test Strip Lot #s: pH 0-3 _____	230315 _____	pH 10-12 _____	219813A _____
Residual Chlorine Test Strip Lot #: _____			

Comments

SM001 Rev. Date 05/24/17 Technician: PETERH Date: 3/5/2019 1:15:00 PM Reviewer: _____ Date: _____

5.1
5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-MB	3Q1656.D	1	03/07/19	NAF	03/06/19	OP74054	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	Compound	Result	RL	Units	Q
375-22-4	Perfluorobutanoic acid	0.00451	0.0077	ug/l	J
2706-90-3	Perfluoropentanoic acid	ND	0.0038	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0038	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0038	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0038	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0038	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0038	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0038	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0038	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0038	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0038	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0038	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0038	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0038	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0038	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0038	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0038	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0038	ug/l	
754-91-6	PFOSA	ND	0.0038	ug/l	
2355-31-9	MeFOSAA	ND	0.019	ug/l	
2991-50-6	EtFOSAA	ND	0.019	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.0077	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0077	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0077	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	92% 30-140%
	13C5-PFPeA	95% 40-140%
	13C5-PFHxA	103% 50-150%
	13C4-PFHpA	106% 50-150%
	13C8-PFOA	120% 50-150%
	13C9-PFNA	116% 50-150%
	13C6-PFDA	92% 50-150%
	13C7-PFUnDA	78% 50-150%

6.1.1
6

Method Blank Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-MB	3Q1656.D	1	03/07/19	NAF	03/06/19	OP74054	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	67% 50-150%
	13C2-PFTeDA	67% 40-150%
	13C3-PFBS	95% 50-150%
	13C3-PFHxS	92% 50-150%
	13C8-PFOS	64% 50-150%
	13C8-FOSA	87% 30-140%
	d3-MeFOSAA	91% 50-150%
	13C2-4:2FTS	102% 50-150%
	13C2-6:2FTS	126% 50-150%
	13C2-8:2FTS	102% 50-150%

6.1.1
6

Method Blank Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74068-MB	3Q1751.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-1, FA62040-2

CAS No.	Compound	Result	RL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	ug/l	
754-91-6	PFOSA	ND	0.0040	ug/l	
2355-31-9	MeFOSAA	ND	0.020	ug/l	
2991-50-6	EtFOSAA	ND	0.020	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.0080	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	99% 30-140%
	13C5-PFPeA	94% 40-140%
	13C5-PFHxA	96% 50-150%
	13C4-PFHpA	95% 50-150%
	13C8-PFOA	96% 50-150%
	13C9-PFNA	94% 50-150%
	13C6-PFDA	90% 50-150%
	13C7-PFUnDA	79% 50-150%

Method Blank Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74068-MB	3Q1751.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-1, FA62040-2

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	74% 50-150%
	13C2-PFTeDA	73% 40-150%
	13C3-PFBS	95% 50-150%
	13C3-PFHxS	100% 50-150%
	13C8-PFOS	96% 50-150%
	13C8-FOSA	92% 30-140%
	d3-MeFOSAA	80% 50-150%
	13C2-4:2FTS	89% 50-150%
	13C2-6:2FTS	91% 50-150%
	13C2-8:2FTS	84% 50-150%

Instrument Blank

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q46-IBLK	3Q1641.D	1	03/07/19	NAF	n/a	n/a	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62040-3

CAS No.	Compound	Result	RL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	ug/l	
754-91-6	PFOSA	ND	0.0080	ug/l	
2355-31-9	MeFOSAA	ND	0.040	ug/l	
2991-50-6	EtFOSAA	ND	0.040	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	96% 50-150%
	13C5-PFPeA	96% 50-150%
	13C5-PFHxA	104% 50-150%
	13C4-PFHpA	107% 50-150%
	13C8-PFOA	112% 50-150%
	13C9-PFNA	112% 50-150%
	13C6-PFDA	114% 50-150%
	13C7-PFUnDA	115% 50-150%

Instrument Blank

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q46-IBLK	3Q1641.D	1	03/07/19	NAF	n/a	n/a	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62040-3

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	113% 50-150%
	13C2-PFTeDA	100% 50-150%
	13C3-PFBS	99% 50-150%
	13C3-PFHxS	102% 50-150%
	13C8-PFOS	105% 50-150%
	13C8-FOSA	107% 50-150%
	d3-MeFOSAA	115% 50-150%
	13C2-4:2FTS	102% 50-150%
	13C2-6:2FTS	111% 50-150%
	13C2-8:2FTS	114% 50-150%

Instrument Blank

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q48-IBLK	3Q1747.D	1	03/11/19	NAF	n/a	n/a	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62040-1, FA62040-2

CAS No.	Compound	Result	RL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	ug/l	
754-91-6	PFOSA	ND	0.0080	ug/l	
2355-31-9	MeFOSAA	ND	0.040	ug/l	
2991-50-6	EtFOSAA	ND	0.040	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	102% 50-150%
	13C5-PFPeA	99% 50-150%
	13C5-PFHxA	100% 50-150%
	13C4-PFHpA	100% 50-150%
	13C8-PFOA	98% 50-150%
	13C9-PFNA	95% 50-150%
	13C6-PFDA	94% 50-150%
	13C7-PFUnDA	92% 50-150%

6.1.4
6

Instrument Blank

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q48-IBLK	3Q1747.D	1	03/11/19	NAF	n/a	n/a	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62040-1, FA62040-2

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	88% 50-150%
	13C2-PFTeDA	72% 50-150%
	13C3-PFBS	102% 50-150%
	13C3-PFHxS	106% 50-150%
	13C8-PFOS	104% 50-150%
	13C8-FOSA	99% 50-150%
	d3-MeFOSAA	92% 50-150%
	13C2-4:2FTS	93% 50-150%
	13C2-6:2FTS	92% 50-150%
	13C2-8:2FTS	89% 50-150%

6.1.4
6

Instrument Blank

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q47-IBLK	3Q1710.D	1	03/08/19	NAF	n/a	n/a	S3Q47

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

OP74054-DUP, OP74054-MS

CAS No.	Compound	Result	RL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0080	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0080	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0080	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0080	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0080	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0080	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0080	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0080	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0080	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0080	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0080	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0080	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0080	ug/l	
754-91-6	PFOSA	ND	0.0080	ug/l	
2355-31-9	MeFOSAA	ND	0.040	ug/l	
2991-50-6	EtFOSAA	ND	0.040	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.016	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.016	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.016	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	96% 50-150%
	13C5-PFPeA	96% 50-150%
	13C5-PFHxA	97% 50-150%
	13C4-PFHpA	98% 50-150%
	13C8-PFOA	99% 50-150%
	13C9-PFNA	99% 50-150%
	13C6-PFDA	104% 50-150%
	13C7-PFUnDA	100% 50-150%

6.1.5
6

Instrument Blank

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q47-IBLK	3Q1710.D	1	03/08/19	NAF	n/a	n/a	S3Q47

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

OP74054-DUP, OP74054-MS

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	97% 50-150%
	13C2-PFTeDA	81% 50-150%
	13C3-PFBS	97% 50-150%
	13C3-PFHxS	97% 50-150%
	13C8-PFOS	97% 50-150%
	13C8-FOSA	99% 50-150%
	d3-MeFOSAA	97% 50-150%
	13C2-4:2FTS	90% 50-150%
	13C2-6:2FTS	92% 50-150%
	13C2-8:2FTS	93% 50-150%

Blank Spike Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-BS	3Q1655.D	1	03/07/19	NAF	03/06/19	OP74054	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.0769	0.0753	98	70-130
2706-90-3	Perfluoropentanoic acid	0.0769	0.0717	93	70-130
307-24-4	Perfluorohexanoic acid	0.0769	0.0722	94	70-130
375-85-9	Perfluoroheptanoic acid	0.0769	0.0729	95	71-130
335-67-1	Perfluorooctanoic acid	0.0769	0.0743	97	74-130
375-95-1	Perfluorononanoic acid	0.0769	0.0723	94	76-130
335-76-2	Perfluorodecanoic acid	0.0769	0.0732	95	70-130
2058-94-8	Perfluoroundecanoic acid	0.0769	0.0706	92	70-130
307-55-1	Perfluorododecanoic acid	0.0769	0.0689	90	70-130
72629-94-8	Perfluorotridecanoic acid	0.0769	0.0675	88	70-139
376-06-7	Perfluorotetradecanoic acid	0.0769	0.0656	85	70-130
375-73-5	Perfluorobutanesulfonic acid	0.0769	0.0727	95	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0769	0.0713	93	70-130
355-46-4	Perfluorohexanesulfonic acid	0.0769	0.0737	96	74-130
375-92-8	Perfluoroheptanesulfonic acid	0.0769	0.0686	89	74-130
1763-23-1	Perfluorooctanesulfonic acid	0.0769	0.0707	92	70-130
68259-12-1	Perfluorononanesulfonic acid	0.0769	0.0548	71	70-130
335-77-3	Perfluorodecanesulfonic acid	0.0769	0.0402	52* a	70-130
754-91-6	PFOSA	0.0769	0.0753	98	70-131
2355-31-9	MeFOSAA	0.0769	0.0727	95	70-130
2991-50-6	EtFOSAA	0.0769	0.0586	76	70-130
757124-72-44:2	Fluorotelomer sulfonate	0.0769	0.0750	98	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.0769	0.0758	99	70-133
39108-34-4	8:2 Fluorotelomer sulfonate	0.0769	0.0775	101	70-130

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	91%	30-140%
	13C5-PFPeA	94%	40-140%
	13C5-PFHxA	102%	50-150%
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	117%	50-150%
	13C9-PFNA	115%	50-150%
	13C6-PFDA	94%	50-150%
	13C7-PFUnDA	81%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-BS	3Q1655.D	1	03/07/19	NAF	03/06/19	OP74054	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	ID Standard Recoveries	BSP	Limits
	13C2-PFDoDA	72%	50-150%
	13C2-PFTeDA	75%	40-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	93%	50-150%
	13C8-PFOS	73%	50-150%
	13C8-FOSA	91%	30-140%
	d3-MeFOSAA	90%	50-150%
	13C2-4:2FTS	107%	50-150%
	13C2-6:2FTS	130%	50-150%
	13C2-8:2FTS	108%	50-150%

(a) Sporadic marginal failure.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74068-BS	3Q1750.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-1, FA62040-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0723	90	70-130
2706-90-3	Perfluoropentanoic acid	0.08	0.0766	96	70-130
307-24-4	Perfluorohexanoic acid	0.08	0.0720	90	70-130
375-85-9	Perfluoroheptanoic acid	0.08	0.0758	95	71-130
335-67-1	Perfluorooctanoic acid	0.08	0.0751	94	74-130
375-95-1	Perfluorononanoic acid	0.08	0.0759	95	76-130
335-76-2	Perfluorodecanoic acid	0.08	0.0749	94	70-130
2058-94-8	Perfluoroundecanoic acid	0.08	0.0753	94	70-130
307-55-1	Perfluorododecanoic acid	0.08	0.0740	93	70-130
72629-94-8	Perfluorotridecanoic acid	0.08	0.0776	97	70-139
376-06-7	Perfluorotetradecanoic acid	0.08	0.0761	95	70-130
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0747	93	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0725	91	70-130
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0720	90	74-130
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0729	91	74-130
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0715	89	70-130
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0656	82	70-130
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0716	90	70-130
754-91-6	PFOSA	0.08	0.0775	97	70-131
2355-31-9	MeFOSAA	0.08	0.0752	94	70-130
2991-50-6	EtFOSAA	0.08	0.0702	88	70-130
757124-72-44:2	Fluorotelomer sulfonate	0.08	0.0768	96	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0767	96	70-133
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0786	98	70-130

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	93%	30-140%
	13C5-PFPeA	93%	40-140%
	13C5-PFHxA	97%	50-150%
	13C4-PFHpA	96%	50-150%
	13C8-PFOA	94%	50-150%
	13C9-PFNA	92%	50-150%
	13C6-PFDA	89%	50-150%
	13C7-PFUnDA	79%	50-150%

* = Outside of Control Limits.

6.2.2
6

Blank Spike Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74068-BS	3Q1750.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-1, FA62040-2

CAS No.	ID Standard Recoveries	BSP	Limits
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	75%	40-150%
	13C3-PFBS	97%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	98%	50-150%
	13C8-FOSA	90%	30-140%
	d3-MeFOSAA	78%	50-150%
	13C2-4:2FTS	96%	50-150%
	13C2-6:2FTS	94%	50-150%
	13C2-8:2FTS	90%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-MS	3Q1731.D	1	03/08/19	NAF	03/06/19	OP74054	S3Q47
FA62023-2 ^a	3Q1730.D	1	03/08/19	NAF	03/06/19	OP74054	S3Q47

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	Compound	FA62023-2 ug/l	Spike Q	MS ug/l	MS %	Limits	
375-22-4	Perfluorobutanoic acid	0.00822	B	0.08	0.0841	95	70-130
2706-90-3	Perfluoropentanoic acid	0.00909		0.08	0.0862	96	70-130
307-24-4	Perfluorohexanoic acid	0.0133		0.08	0.0900	96	70-130
375-85-9	Perfluoroheptanoic acid	0.00391		0.08	0.0812	97	71-130
335-67-1	Perfluorooctanoic acid	0.00969		0.08	0.0870	97	74-130
375-95-1	Perfluorononanoic acid	0.00132		0.08	0.0766	94	76-130
335-76-2	Perfluorodecanoic acid	ND		0.08	0.0760	95	70-130
2058-94-8	Perfluoroundecanoic acid	ND		0.08	0.0701	88	70-130
307-55-1	Perfluorododecanoic acid	ND		0.08	0.0643	80	70-130
72629-94-8	Perfluorotridecanoic acid	ND		0.08	0.0737	92	70-139
376-06-7	Perfluorotetradecanoic acid	ND		0.08	0.0619	77	70-130
375-73-5	Perfluorobutanesulfonic acid	0.0319		0.08	0.109	96	73-130
2706-91-4	Perfluoropentanesulfonic acid	ND		0.08	0.0765	96	70-130
355-46-4	Perfluorohexanesulfonic acid	0.00142		0.08	0.0791	97	74-130
375-92-8	Perfluoroheptanesulfonic acid	ND		0.08	0.0759	95	74-130
1763-23-1	Perfluorooctanesulfonic acid	0.00610		0.08	0.0789	91	70-130
68259-12-1	Perfluorononanesulfonic acid	ND		0.08	0.0507	63*	70-130
335-77-3	Perfluorodecanesulfonic acid	ND		0.08	0.0357	45*	70-130
754-91-6	PFOSA	ND		0.08	0.0781	98	70-131
2355-31-9	MeFOSAA	ND		0.08	0.0735	92	70-130
2991-50-6	EtFOSAA	ND		0.08	0.0613	77	70-130
757124-72-44:2	Fluorotelomer sulfonate	ND		0.08	0.0799	100	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.08	0.0791	99	70-133
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.08	0.0798	100	70-130

CAS No.	ID Standard Recoveries	MS	FA62023-2	Limits
	13C4-PFBA	71%	74%	30-140%
	13C5-PFPeA	87%	86%	40-140%
	13C5-PFHxA	92%	93%	50-150%
	13C4-PFHpA	94%	96%	50-150%
	13C8-PFOA	103%	108%	50-150%
	13C9-PFNA	100%	104%	50-150%
	13C6-PFDA	89%	104%	50-150%
	13C7-PFUnDA	75%	92%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-MS	3Q1731.D	1	03/08/19	NAF	03/06/19	OP74054	S3Q47
FA62023-2 ^a	3Q1730.D	1	03/08/19	NAF	03/06/19	OP74054	S3Q47

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	ID Standard Recoveries	MS	FA62023-2	Limits
	13C2-PFDoDA	59%	72%	50-150%
	13C2-PFTeDA	41%	50%	40-150%
	13C3-PFBS	88%	88%	50-150%
	13C3-PFHxS	90%	93%	50-150%
	13C8-PFOS	71%	84%	50-150%
	13C8-FOSA	67%	81%	30-140%
	d3-MeFOSAA	85%	95%	50-150%
	13C2-4:2FTS	102%	95%	50-150%
	13C2-6:2FTS	109%	108%	50-150%
	13C2-8:2FTS	113%	117%	50-150%

(a) Insufficient sample for re-extraction.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74068-MS	3Q1756.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48
OP74068-MSD	3Q1757.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48
FA62099-2	3Q1755.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-1, FA62040-2

CAS No.	Compound	FA62099-2 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
375-22-4	Perfluorobutanoic acid	ND		0.0769	0.0672	87	0.0769	0.0632	82	6	70-130/30
2706-90-3	Perfluoropentanoic acid	ND		0.0769	0.0714	93	0.0769	0.0670	87	6	70-130/30
307-24-4	Perfluorohexanoic acid	ND		0.0769	0.0678	88	0.0769	0.0627	82	8	70-130/30
375-85-9	Perfluoroheptanoic acid	ND		0.0769	0.0705	92	0.0769	0.0659	86	7	71-130/30
335-67-1	Perfluorooctanoic acid	ND		0.0769	0.0709	92	0.0769	0.0654	85	8	74-130/30
375-95-1	Perfluorononanoic acid	ND		0.0769	0.0705	92	0.0769	0.0671	87	5	76-130/30
335-76-2	Perfluorodecanoic acid	ND		0.0769	0.0705	92	0.0769	0.0663	86	6	70-130/30
2058-94-8	Perfluoroundecanoic acid	ND		0.0769	0.0699	91	0.0769	0.0660	86	6	70-130/30
307-55-1	Perfluorododecanoic acid	ND		0.0769	0.0697	91	0.0769	0.0658	86	6	70-130/30
72629-94-8	Perfluorotridecanoic acid	ND		0.0769	0.0691	90	0.0769	0.0720	94	4	70-139/30
376-06-7	Perfluorotetradecanoic acid	ND		0.0769	0.0727	95	0.0769	0.0675	88	7	70-130/30
375-73-5	Perfluorobutanesulfonic acid	ND		0.0769	0.0705	92	0.0769	0.0649	84	8	73-130/30
2706-91-4	Perfluoropentanesulfonic acid	ND		0.0769	0.0673	87	0.0769	0.0628	82	7	70-130/30
355-46-4	Perfluorohexanesulfonic acid	ND		0.0769	0.0679	88	0.0769	0.0643	84	5	74-130/30
375-92-8	Perfluoroheptanesulfonic acid	ND		0.0769	0.0673	87	0.0769	0.0628	82	7	74-130/30
1763-23-1	Perfluorooctanesulfonic acid	ND		0.0769	0.0674	88	0.0769	0.0643	84	5	70-130/30
68259-12-1	Perfluorononanesulfonic acid	ND		0.0769	0.0598	78	0.0769	0.0577	75	4	70-130/30
335-77-3	Perfluorodecanesulfonic acid	ND		0.0769	0.0663	86	0.0769	0.0639	83	4	70-130/30
754-91-6	PFOSA	ND		0.0769	0.0733	95	0.0769	0.0678	88	8	70-131/30
2355-31-9	MeFOSAA	ND		0.0769	0.0723	94	0.0769	0.0658	86	9	70-130/30
2991-50-6	EtFOSAA	ND		0.0769	0.0647	84	0.0769	0.0596	77	8	70-130/30
757124-72-44:2	Fluorotelomer sulfonate	ND		0.0769	0.0732	95	0.0769	0.0668	87	9	70-130/30
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.0769	0.0720	94	0.0769	0.0680	88	6	70-133/30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.0769	0.0735	96	0.0769	0.0710	92	3	70-130/30

CAS No.	ID Standard Recoveries	MS	MSD	FA62099-2	Limits
13C4-PFBA		116%	118%	103%	30-140%
13C5-PFPeA		111%	112%	98%	40-140%
13C5-PFHxA		112%	114%	101%	50-150%
13C4-PFHpA		111%	112%	101%	50-150%
13C8-PFOA		119%	120%	112%	50-150%
13C9-PFNA		115%	112%	103%	50-150%
13C6-PFDA		99%	96%	90%	50-150%
13C7-PFUnDA		89%	89%	79%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74068-MS	3Q1756.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48
OP74068-MSD	3Q1757.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48
FA62099-2	3Q1755.D	1	03/11/19	NAF	03/08/19	OP74068	S3Q48

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-1, FA62040-2

6.4.1
6

CAS No.	ID Standard Recoveries	MS	MSD	FA62099-2	Limits
	13C2-PFDoDA	85%	86%	77%	50-150%
	13C2-PFTeDA	97%	90%	84%	40-150%
	13C3-PFBS	111%	113%	99%	50-150%
	13C3-PFHxS	114%	115%	102%	50-150%
	13C8-PFOS	99%	96%	84%	50-150%
	13C8-FOSA	94%	98%	84%	30-140%
	d3-MeFOSAA	92%	93%	83%	50-150%
	13C2-4:2FTS	111%	114%		50-150%
	13C2-6:2FTS	122%	122%	108%	50-150%
	13C2-8:2FTS	108%	102%	91%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-DUP	3Q1737.D	2	03/08/19	NAF	03/06/19	OP74054	S3Q47
FA62024-1 ^a	3Q1736.D	2	03/08/19	NAF	03/06/19	OP74054	S3Q47

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	Compound	FA62024-1		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
375-22-4	Perfluorobutanoic acid	0.220	B	0.265		19	30
2706-90-3	Perfluoropentanoic acid	0.148		0.163		10	30
307-24-4	Perfluorohexanoic acid	0.382		0.424		10	30
375-85-9	Perfluoroheptanoic acid	0.0445		0.0494		10	30
335-67-1	Perfluorooctanoic acid	0.107		0.118		10	30
375-95-1	Perfluorononanoic acid	0.00237		0.00268	J	12	30
335-76-2	Perfluorodecanoic acid	ND		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	ND		ND		nc	30
307-55-1	Perfluorododecanoic acid	ND		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	ND		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	ND		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.166		0.186		11	30
2706-91-4	Perfluoropentanesulfonic acid	0.00397		0.00548	J	32*	30
355-46-4	Perfluorohexanesulfonic acid	0.0218		0.0221		1	30
375-92-8	Perfluoroheptanesulfonic acid	ND		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0191		0.0188		2	30
68259-12-1	Perfluorononanesulfonic acid	ND		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	ND		ND		nc	30
754-91-6	PFOSA	ND		ND		nc	30
2355-31-9	MeFOSAA	ND		ND		nc	30
2991-50-6	EtFOSAA	ND		ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	ND		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0342		0.0341		0	30
39108-34-4	8:2 Fluorotelomer sulfonate	ND		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA62024-1	Limits
	13C4-PFBA	8%* ^c	10%* ^b	30-140%
	13C5-PFPeA	79%	76%	40-140%
	13C5-PFHxA	88%	85%	50-150%
	13C4-PFHpA	90%	87%	50-150%
	13C8-PFOA	97%	94%	50-150%
	13C9-PFNA	89%	86%	50-150%
	13C6-PFDA	86%	84%	50-150%
	13C7-PFUnDA	73%	69%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA62040
Account: SGSAKA SGS North America, Inc
Project: 1199071

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74054-DUP	3Q1737.D	2	03/08/19	NAF	03/06/19	OP74054	S3Q47
FA62024-1 ^a	3Q1736.D	2	03/08/19	NAF	03/06/19	OP74054	S3Q47

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62040-3

CAS No.	ID Standard Recoveries	DUP	FA62024-1	Limits
	13C2-PFDoDA	66%	61%	50-150%
	13C2-PFTeDA	63%	52%	40-150%
	13C3-PFBS	81%	79%	50-150%
	13C3-PFHxS	80%	79%	50-150%
	13C8-PFOS	71%	71%	50-150%
	13C8-FOSA	83%	69%	30-140%
	d3-MeFOSAA	74%	69%	50-150%
	13C2-4:2FTS	88%	85%	50-150%
	13C2-6:2FTS	108%	102%	50-150%
	13C2-8:2FTS	88%	86%	50-150%

- (a) Dilution required due to matrix interference.
- (b) Outside control limits due to matrix interference. Confirmed by batch QC.
- (c) Outside control limits.

* = Outside of Control Limits.