



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

NORTECH, Inc.

April 22, 2019

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

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

RE: Spring 2019 - PFAS Groundwater Results

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

[REDACTED]

Thank you very much for participating in **NORTECH's** well search and initial groundwater assessment. Enclosed is the laboratory report for your well. The laboratory results of your groundwater sample are non-detect for the two compounds of concern. There is no action you need to take at this time.

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

Please reference Section 4 - "Report of Analysis" found on Page 13 of this report for the results of your groundwater related to per- and poly-fluoroalkyl substances (PFAS). PFAS compounds Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic Acid (PFOA) were not detected in your water well sample.

♦
www.nortechengr.com

The Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) have set an updated Lifetime Health Advisory (LHA) level of 0.070 micrograms per liter (µg/L). The LHA of 0.070 µg/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: 1199072

Laboratory Report of Analysis

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

Report Number: **1199072**

Client Project: **PFC Well Scarch 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.



Alaska Division Technical Director

Stephen Ede
2019.03.19
13:48:07 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Nortech**

SGS Project: **1199072**

Project Name/Site: **PFC Well Scarch NAPA-Van Horn**

Project Contact: **Scott Hummel**

Refer to sample receipt form for information on sample condition.

[REDACTED]-01 (1199072001) 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: 03/19/2019 11:53:43AM

Sample Summary

<u>Client Sample ID</u> [REDACTED]-01	<u>Lab Sample ID</u> 1199072001	<u>Collected</u> 02/25/2019	<u>Received</u> 03/01/2019	<u>Matrix</u> Water (Surface, Eff., Ground)
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Method

Method Description

Print Date: 03/19/2019 11:53:46AM

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1199072



Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virginia	Kentucky

www.us.sqs.com

[illegible]





e-Sample Receipt Form

SGS Workorder #:

1199072



1 1 9 9 0 7 2

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		
		N/A	***Exemption permitted for metals (e.g., 200.8/6020A).	
Were proper containers (type/mass/volume/preservative***) used?		Yes		
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>
1199072001-A	No Preservative Required	OK			
1199072001-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

1199072

SGS Job Number: FA62041

Sampling Date: 02/25/19

Report to:

andrea.colby@sgs.com

Total number of pages in report: **22**



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.

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SGS North America Inc.

Sample Summary

SGS North America, Inc
1199072

Job No: FA62041

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FA62041-1	02/25/19	17:35 JS	03/05/19	AQ	Water	-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS North America, Inc

Job No FA62041

Site: 1199072

Report Date 3/11/2019 11:34:22

1 Sample was collected on 02/25/2019 and received at SGS North America Inc - Orlando on 03/05/2019 properly preserved, at 3.6 Deg. C and intact. This sample received an SGS Orlando job number of FA62041. 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: OP74055

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA62041-1MS, FA62042-1DUP were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Sample(s) FA62041-1 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.

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

OP74055-BS for Perfluorodecanesulfonic acid: Sporadic marginal failure.

Matrix Spike Recovery(s) for Perfluorodecanesulfonic acid are outside control limits. Probable cause is due to matrix interference.

RPD(s) for Duplicate for Perfluorooctanoic acid are outside control limits for sample OP74055-DUP. Probable cause is due to sample non-homogeneity.

FA62041-1: Insufficient sample for re-extraction.

FA62041-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits.

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: FA62041
Account: SGS North America, Inc
Project: 1199072
Collected: 02/25/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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FA62041-1 [REDACTED]-01

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Page 1 of 2

Client Sample ID:	██████████-01	Date Sampled:	02/25/19
Lab Sample ID:	FA62041-1	Date Received:	03/05/19
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	EPA 537M BY ID EPA 537 MOD		
Project:	1199072		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3Q1687.D	1	03/07/19 23:49	NAF	03/06/19 09:30	OP74055	S3Q46
Run #2							

	Initial Volume	Final Volume
Run #1	260 ml	1.0 ml
Run #2		

PFAS List

CAS No.	Compound	Result	RL	Units	Q
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PERFLUOROALKYLCARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	ND	0.0077	ug/l	B
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	

PERFLUOROALKYLSULFONATES

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 ^b	ND	0.0038	ug/l	

PERFLUOROCTANESULFONAMIDES

754-91-6	PFOSA	ND	0.0038	ug/l	
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PERFLUOROCTANESULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	ND	0.019	ug/l	
2991-50-6	EtFOSAA	ND	0.019	ug/l	

FLUOROTELOMER SULFONATES

757124-72-4	4:2 Fluorotelomer sulfonate	ND	0.0077	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0077	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

Report of Analysis

Page 2 of 2

Client Sample ID: [REDACTED]-01
Lab Sample ID: FA62041-1
Matrix: AQ - Water
Method: EPA 537M BY ID EPA 537 MOD
Project: 1199072

Date Sampled: 02/25/19

Date Received: 03/05/19

Percent Solids: n/a

PFAS List

CAS No.	Compound	Result	RL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0077	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	86%		30-140%
	13C5-PFPeA	92%		40-140%
	13C5-PFHxA	100%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	120%		50-150%
	13C9-PFNA	117%		50-150%
	13C6-PFDA	102%		50-150%
	13C7-PFUnDA	93%		50-150%
	13C2-PFDoDA	84%		50-150%
	13C2-PFTeDA	87%		40-150%
	13C3-PFBS	91%		50-150%
	13C3-PFHxS	91%		50-150%
	13C8-PFOS	82%		50-150%
	13C8-FOSA	89%		30-140%
	d3-MeFOSAA	100%		50-150%
	13C2-4:2FTS	103%		50-150%
	13C2-6:2FTS	128%		50-150%
	13C2-8:2FTS	108%		50-150%

(a) Insufficient sample for re-extraction.

(b) 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

FA6204

[illegible]

X | 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1803 Fax: (910) 350-1557

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

1199072 PFC 03.04.19 als

FA62041: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA62041

Client: SGS

Project: 1199072

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

Delivery Method: UPS

Airbill #s: 1za8619w0166092034

Therm ID: IR 1;

Therm CF: -0.2;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.6);

Cooler Information

Y or N

1. Custody Seals Present
2. Custody Seals Intact
3. Temp criteria achieved
4. Cooler temp verification
5. Cooler media

☒ ☐
☒ ☐
☒ ☐
IR Gun
Ice (Bag)

Trip Blank Information

Y or N N/A

1. Trip Blank present / cooler
2. Trip Blank listed on COC

☐ ☐ ☒
☐ ☐ ☒

W or S N/A

3. Type Of TB Received

☐ ☐ ☒

Misc. Information

Number of Encores: 25-Gram 5-Gram
Test Strip Lot #s: pH 0-3 230315
Residual Chlorine Test Strip Lot #:

Sample Information

Y or N N/A

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

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Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP

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

Reviewer:

Date:

FA62041: Chain of Custody
Page 2 of 2

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

Page 1 of 2

Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-MB	3Q1686.D	1	03/07/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	Compound	Result	RL	Units	Q
375-22-4	Perfluorobutanoic acid	0.00464	0.0080	ug/l	J
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	89% 30-140%
	13C5-PFPeA	91% 40-140%
	13C5-PFHxA	100% 50-150%
	13C4-PFHpA	103% 50-150%
	13C8-PFOA	117% 50-150%
	13C9-PFNA	115% 50-150%
	13C6-PFDA	90% 50-150%
	13C7-PFUnDA	77% 50-150%

Method Blank Summary

Page 2 of 2

Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-MB	3Q1686.D	1	03/07/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	65% 50-150%
	13C2-PFTeDA	65% 40-150%
	13C3-PFBS	90% 50-150%
	13C3-PFHxS	88% 50-150%
	13C8-PFOS	62% 50-150%
	13C8-FOSA	84% 30-140%
	d3-MeFOSAA	88% 50-150%
	13C2-4:2FTS	99% 50-150%
	13C2-6:2FTS	124% 50-150%
	13C2-8:2FTS	102% 50-150%

Instrument Blank

Page 1 of 2

Job Number: FA62041

Account: SGSAKA SGS North America, Inc

Project: 1199072

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

FA62041-1

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

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Job Number: FA62041

Account: SGSAKA SGS North America, Inc

Project: 1199072

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

FA62041-1

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%

Blank Spike Summary

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Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-BS	3Q1685.D	1	03/07/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.08	0.0789	99	70-130
2706-90-3	Perfluoropentanoic acid	0.08	0.0748	94	70-130
307-24-4	Perfluorohexanoic acid	0.08	0.0753	94	70-130
375-85-9	Perfluoroheptanoic acid	0.08	0.0762	95	71-130
335-67-1	Perfluorooctanoic acid	0.08	0.0771	96	74-130
375-95-1	Perfluorononanoic acid	0.08	0.0751	94	76-130
335-76-2	Perfluorodecanoic acid	0.08	0.0751	94	70-130
2058-94-8	Perfluoroundecanoic acid	0.08	0.0737	92	70-130
307-55-1	Perfluorododecanoic acid	0.08	0.0716	90	70-130
72629-94-8	Perfluorotridecanoic acid	0.08	0.0689	86	70-139
376-06-7	Perfluorotetradecanoic acid	0.08	0.0682	85	70-130
375-73-5	Perfluorobutanesulfonic acid	0.08	0.0741	93	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.08	0.0709	89	70-130
355-46-4	Perfluorohexanesulfonic acid	0.08	0.0752	94	74-130
375-92-8	Perfluoroheptanesulfonic acid	0.08	0.0721	90	74-130
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0747	93	70-130
68259-12-1	Perfluorononanesulfonic acid	0.08	0.0564	71	70-130
335-77-3	Perfluorodecanesulfonic acid	0.08	0.0425	53* a	70-130
754-91-6	PFOSA	0.08	0.0787	98	70-131
2355-31-9	MeFOSAA	0.08	0.0789	99	70-130
2991-50-6	EtFOSAA	0.08	0.0627	78	70-130
757124-72-44:2	Fluorotelomer sulfonate	0.08	0.0773	97	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.08	0.0796	100	70-133
39108-34-4	8:2 Fluorotelomer sulfonate	0.08	0.0781	98	70-130

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	91%	30-140%
	13C5-PFPeA	94%	40-140%
	13C5-PFHxA	98%	50-150%
	13C4-PFHpA	100%	50-150%
	13C8-PFOA	114%	50-150%
	13C9-PFNA	113%	50-150%
	13C6-PFDA	92%	50-150%
	13C7-PFUnDA	80%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-BS	3Q1685.D	1	03/07/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	ID Standard Recoveries	BSP	Limits
	13C2-PFDoDA	70%	50-150%
	13C2-PFTeDA	74%	40-150%
	13C3-PFBS	94%	50-150%
	13C3-PFHxS	90%	50-150%
	13C8-PFOS	70%	50-150%
	13C8-FOSA	88%	30-140%
	d3-MeFOSAA	89%	50-150%
	13C2-4:2FTS	104%	50-150%
	13C2-6:2FTS	127%	50-150%
	13C2-8:2FTS	105%	50-150%

(a) Sporadic marginal failure.

* = Outside of Control Limits.

Matrix Spike Summary

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Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-MS	3Q1688.D	1	03/08/19	NAF	03/06/19	OP74055	S3Q46
FA62041-1 ^a	3Q1687.D	1	03/07/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	Compound	FA62041-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.00198	B	0.0769	0.0694	88	70-130
2706-90-3	Perfluoropentanoic acid	0.00223		0.0769	0.0681	86	70-130
307-24-4	Perfluorohexanoic acid	0.00226		0.0769	0.0689	87	70-130
375-85-9	Perfluoroheptanoic acid	0.00119		0.0769	0.0680	87	71-130
335-67-1	Perfluorooctanoic acid	0.00155		0.0769	0.0695	88	74-130
375-95-1	Perfluorononanoic acid	ND		0.0769	0.0670	87	76-130
335-76-2	Perfluorodecanoic acid	ND		0.0769	0.0677	88	70-130
2058-94-8	Perfluoroundecanoic acid	ND		0.0769	0.0681	89	70-130
307-55-1	Perfluorododecanoic acid	ND		0.0769	0.0671	87	70-130
72629-94-8	Perfluorotridecanoic acid	ND		0.0769	0.0748	97	70-139
376-06-7	Perfluorotetradecanoic acid	ND		0.0769	0.0678	88	70-130
375-73-5	Perfluorobutanesulfonic acid	ND		0.0769	0.0671	87	73-130
2706-91-4	Perfluoropentanesulfonic acid	ND		0.0769	0.0662	86	70-130
355-46-4	Perfluorohexanesulfonic acid	0.00150		0.0769	0.0686	87	74-130
375-92-8	Perfluoroheptanesulfonic acid	ND		0.0769	0.0681	89	74-130
1763-23-1	Perfluorooctanesulfonic acid	0.00172		0.0769	0.0670	85	70-130
68259-12-1	Perfluorononanesulfonic acid	ND		0.0769	0.0583	76	70-130
335-77-3	Perfluorodecanesulfonic acid	ND		0.0769	0.0472	61*	70-130
754-91-6	PFOSA	ND		0.0769	0.0699	91	70-131
2355-31-9	MeFOSAA	ND		0.0769	0.0702	91	70-130
2991-50-6	EtFOSAA	ND		0.0769	0.0604	79	70-130
757124-72-44:2	Fluorotelomer sulfonate	ND		0.0769	0.0694	90	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	ND		0.0769	0.0706	92	70-133
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.0769	0.0697	91	70-130

CAS No.	ID Standard Recoveries	MS	FA62041-1	Limits
13C4-PFBA		88%	86%	30-140%
13C5-PFPcA		93%	92%	40-140%
13C5-PFHxA		99%	100%	50-150%
13C4-PFHpA		102%	105%	50-150%
13C8-PFOA		112%	120%	50-150%
13C9-PFNA		111%	117%	50-150%
13C6-PFDA		97%	102%	50-150%
13C7-PFUnDA		90%	93%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

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Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-MS	3Q1688.D	1	03/08/19	NAF	03/06/19	OP74055	S3Q46
FA62041-1 ^a	3Q1687.D	1	03/07/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	ID Standard Recoveries	MS	FA62041-1	Limits
	13C2-PFDoDA	82%	84%	50-150%
	13C2-PFTeDA	83%	87%	40-150%
	13C3-PFBS	90%	91%	50-150%
	13C3-PFHxS	89%	91%	50-150%
	13C8-PFOS	80%	82%	50-150%
	13C8-FOSA	87%	89%	30-140%
	d3-MeFOSAA	95%	100%	50-150%
	13C2-4:2FTS	106%	103%	50-150%
	13C2-6:2FTS	127%	128%	50-150%
	13C2-8:2FTS	108%	108%	50-150%

(a) Insufficient sample for re-extraction.

* = Outside of Control Limits.

Duplicate Summary

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Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-DUP	3Q1690.D	1	03/08/19	NAF	03/06/19	OP74055	S3Q46
FA62042-1	3Q1689.D	1	03/08/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	Compound	FA62042-1 ug/l	DUP Q	ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	ND	ND			nc	30
2706-90-3	Perfluoropentanoic acid	ND	ND			nc	30
307-24-4	Perfluorohexanoic acid	0.00193	0.00193	J	0		30
375-85-9	Perfluoroheptanoic acid	ND	ND			nc	30
335-67-1	Perfluorooctanoic acid	0.000964	ND			200*	30
375-95-1	Perfluorononanoic acid	ND	ND			nc	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	0.00313	0.00316	J	1		30
2706-91-4	Perfluoropentanesulfonic acid	0.00275	0.00274	J	0		30
355-46-4	Perfluorohexanesulfonic acid	0.00641	0.00647		1		30
375-92-8	Perfluoroheptanesulfonic acid	ND	ND			nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.00221	0.00234	J	6		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	ND	ND			nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	ND	ND			nc	30

CAS No.	ID Standard Recoveries	DUP	FA62042-1	Limits
	13C4-PFBA	88%	86%	30-140%
	13C5-PFPeA	94%	91%	40-140%
	13C5-PFHxA	103%	99%	50-150%
	13C4-PFHpA	106%	103%	50-150%
	13C8-PFOA	120%	118%	50-150%
	13C9-PFNA	117%	117%	50-150%
	13C6-PFDA	98%	100%	50-150%
	13C7-PFUnDA	93%	94%	50-150%

* = Outside of Control Limits.

Duplicate Summary

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Job Number: FA62041
Account: SGSAKA SGS North America, Inc
Project: 1199072

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74055-DUP	3Q1690.D	1	03/08/19	NAF	03/06/19	OP74055	S3Q46
FA62042-1	3Q1689.D	1	03/08/19	NAF	03/06/19	OP74055	S3Q46

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62041-1

CAS No.	ID Standard Recoveries	DUP	FA62042-1	Limits
	13C2-PFDoDA	85%	85%	50-150%
	13C2-PFTeDA	96%	90%	40-150%
	13C3-PFBS	92%	90%	50-150%
	13C3-PFHxS	89%	89%	50-150%
	13C8-PFOS	73%	78%	50-150%
	13C8-FOSA	89%	90%	30-140%
	d3-MeFOSAA	96%	98%	50-150%
	13C2-4:2FTS	106%	101%	50-150%
	13C2-6:2FTS	130%	128%	50-150%
	13C2-8:2FTS	106%	108%	50-150%

* = Outside of Control Limits.