



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

May 28, 2019

NORTECH, Inc.

Sent via email to [REDACTED]

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

[REDACTED]
[REDACTED]
[REDACTED]
RE: Spring 2019 - PFAS Groundwater Results

Dear [REDACTED]

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

Thank you very much for participating in **NORTECH's** well search and initial groundwater assessment. The laboratory results of your groundwater sample detected one of the 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.

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

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 0.0057 micrograms per liter (µg/L). This combined result is below the current LHA.

♦
www.nortechengr.com

The Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) have set an updated LHA level of 0.070 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: 1199138

Laboratory Report of Analysis

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

Report Number: **1199138**

Client Project: **PFC Well Search - Napa - Van H**

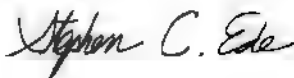
Dear Scott Hummel,

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

2019.04.17

16:42:02 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Nortech**

SGS Project: **1199138**

Project Name/Site: **PFC Well Search - Napa - Van H**

Project Contact: **Scott Hummel**

Refer to sample receipt form for information on sample condition.

(1199138001) PS

6 Compounds PFAS by EPA 537 were 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: 04/17/2019 3:25:13PM

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
[REDACTED]	1199138001	03/27/2019	03/29/2019	Water (Surface, Eff., Ground)

Method

Method Description

Print Date: 04/17/2019 3:25:15PM

Dawkins, Jennifer A (Anchorage)

From: Dawkins, Jennifer A (Anchorage)
Sent: Tuesday, April 09, 2019 10:18 AM
To: Dawkins, Jennifer A (Anchorage)
Subject: 1199138 Change Order

Please report J-flags for 1199138, per client.

To clarify, the client needs the full list of 24 compounds of PFAS reported, same as 1189850, as stated on the COC.

Thanks,

Jen

Jennifer A-B Dawkins
Environment, Health & Safety – Alaska Division
Fairbanks Client Services
Project Manager

SGS – North America Inc.
3180 Peger Rd. Ste. 190
Fairbanks, AK 99709

Phone: 907-474-8656
Mobile: 907-322-8444
E-mail : jennifer.dawkins@sgs.com

Data Deliverables At: [Engage - Home](#)

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1199138



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 <u>1</u> of <u>1</u>					
Section 1	CONTACT: Scott Hummel				PHONE NO: 907-452-5688		Section 3		Preservative										
	PROJECT PFC well Search - NAME: Napa-Van Horn				PROJECT/ PWSID/ PERMIT#: 17-1001		CONTAINER	Type C = COMP G = GRAB MI = Multi Incremental Solids											
	REPORTS TO: Scott Hummel				E-MAIL: scott.hummel@nortechengr.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	CONTAINER	PFCS by EPA 537									REMARKS/ LOC ID			
	A-B		3/27/19	14:35	Water			2	grab	X									
Section 5	Relinquished By: (1)		Date	Time	Received By:		3-28-19 10:15		Section 4		DOD Project? Yes No		Data Deliverable Requirements:						
	Relinquished By: (2)		Date	Time	Received By:				Cooler ID:										
	Relinquished By: (3)		Date	Time	Received By:		Requested Turnaround Time and/or Special Instructions: std TAT												
	Relinquished By: (4)		Date	Time	Received For Laboratory By:		Run same list as 2018 WO 1189850												
								Temp Blank °C: 5.5°C		Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT									
								or Ambient []		(See attached Sample Receipt Form) (See attached Sample Receipt Form)									





e-Sample Receipt Form

SGS Workorder #:

1199138



1 1 9 9 1 3 8

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	1F, 1B		
COC accompanied samples?	Yes			
DOD: Were samples received in COC corresponding coolers?	N/A			
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	@ 2.5 °C	Therm. ID: D58
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.	N/A	Cooler ID:	@	°C Therm. ID:
	N/A	Cooler ID:	@	°C Therm. ID:
	N/A	Cooler ID:	@	°C Therm. ID:
	N/A	Cooler ID:	@	°C Therm. ID:
	N/A			
*If >6°C, were samples collected <8 hours ago?		N/A		
If <0°C, were sample containers ice free?		N/A		
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.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	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>
1199138001-A	No Preservative Required	OK			
1199138001-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

1199138

SGS Job Number: FA62921

Sampling Date: 03/27/19

Report to:

SGS North America, Inc
200 W Potter Dr
Anchorage, AK 99518
julie.shumway@sgs.com

ATTN: Julie Shumway

Total number of pages in report: **23**



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: FA62921-1: 2142 STANDARD-01	7
Section 5: Misc. Forms	9
5.1: Chain of Custody	10
Section 6: MS Semi-volatiles - QC Data Summaries	13
6.1: Method Blank Summary	14
6.2: Blank Spike Summary	18
6.3: Matrix Spike Summary	20
6.4: Duplicate Summary	22



SGS North America Inc.

Sample Summary

SGS North America, Inc
1199138

Job No: FA62921

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FA62921-1	03/27/19	14:35 JS	04/02/19	AQ	Water	-01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS North America, Inc

Job No: FA62921

Site: 1199138

Report Date 4/17/2019 6:31:48

1 Sample was collected on 03/27/2019 and were received at SGS North America Inc - Orlando on 04/02/2019 properly preserved, at 4 Deg. C and intact. This sample received an SGS Orlando job number of FA62921. 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: OP74498

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA63050-1DUP, JC85617-2MS, FA63050-1DUP 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.

Matrix Spike Recovery(s) for 4:2 Fluorotelomer sulfonate, 8:2 Fluorotelomer sulfonate, BiFOSAA, MeFOSAA, Perfluorodecanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanesulfonic acid, Perfluorohexanesulfonic acid, Perfluorononanoic acid, Perfluorooctanoic acid, Perfluoropentanesulfonic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, PFOSA, 6:2 Fluorotelomer sulfonate, Perfluorobutanesulfonic acid, Perfluorobutanoic acid, Perfluoroheptanoic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluoropentanoic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

Sample(s) FA62921-1 have surrogates outside control limits.

FA62921-1 for Perfluorodecanesulfonic acid: Associated BS recovery outside control limits.

FA62921-1 for Perfluorododecanoic acid: Associated ID Standard outside control limits due to matrix interference.

FA62921-1 for 13C2-PFDoDA: Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time.

OP74498-DUP for 13C2-6:2FTS: Outside control limits.

Matrix: AQ

Batch ID: OP74575

Sample(s) FA62921-1 have surrogates outside control limits.

FA62921-1: Confirmation run.

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: FA62921
Account: SGS North America, Inc
Project: 1199138
Collected: 03/27/19



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA62921-1		-01				
Perfluorobutanoic acid		0.00338 J	0.0080	0.0040	ug/l	EPA 537M BY ID
Perfluoropentanoic acid		0.00301 J	0.0040	0.0020	ug/l	EPA 537M BY ID
Perfluorohexanoic acid		0.00258 J	0.0040	0.0020	ug/l	EPA 537M BY ID
Perfluoroheptanoic acid		0.00138 J	0.0040	0.0020	ug/l	EPA 537M BY ID
Perfluorooctanoic acid		0.00170 J	0.0040	0.0020	ug/l	EPA 537M BY ID
Perfluorohexanesulfonic acid		0.00284 J	0.0040	0.0020	ug/l	EPA 537M BY ID

Sample Results

Report of Analysis

Report of Analysis

Page 1 of 2

Client Sample ID:	██████████-01	Date Sampled:	03/27/19
Lab Sample ID:	FA62921-1	Date Received:	04/02/19
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	EPA 537M BY ID EPA 537 MOD		
Project:	1199138		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q28895.D	1	04/11/19 06:52	NG	04/06/19 08:30	OP74498	S2Q459
Run #2 ^a	2Q29097.D	1	04/16/19 13:36	NG	04/13/19 09:00	OP74575	S2Q463

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

PERFLUOROALKYLCARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.00338	0.0080	0.0040	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.00301	0.0040	0.0020	0.0015	ug/l	J
307-24-4	Perfluorohexanoic acid	0.00258	0.0040	0.0020	0.0010	ug/l	J
375-85-9	Perfluoroheptanoic acid	0.00138	0.0040	0.0020	0.0010	ug/l	J
335-67-1	Perfluorooctanoic acid	0.00170	0.0040	0.0020	0.0010	ug/l	J
375-95-1	Perfluorononanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid ^b	0.0020 U	0.0040	0.0020	0.0015	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	

PERFLUOROALKYLSULFONATES

375-73-5	Perfluorobutanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.00284	0.0040	0.0020	0.0010	ug/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid ^c	0.0020 U	0.0040	0.0020	0.0010	ug/l	

PERFLUOROOCTANESULFONAMIDES

754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
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PERFLUOROOCTANESULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	0.0080 U	0.020	0.0080	0.0040	ug/l	
2991-50-6	EtFOSAA	0.0080 U	0.020	0.0080	0.0040	ug/l	

FLUOROTELOMER SULFONATES

757124-72-4	4:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection 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

Page 2 of 2

Client Sample ID: [REDACTED]-01

Lab Sample ID: FA62921-1

Date Sampled: 03/27/19

Matrix: AQ - Water

Date Received: 04/02/19

Method: EPA 537M BY ID EPA 537 MOD

Percent Solids: n/a

Project: 1199138

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	92%	89%	30-140%
	13C5-PFPeA	92%	95%	40-140%
	13C5-PFHxA	98%	95%	50-150%
	13C4-PFHpA	128%	93%	50-150%
	13C8-PFOA	116%	100%	50-150%
	13C9-PFNA	112%	94%	50-150%
	13C6-PFDA	96%	58%	50-150%
	13C7-PFUnDA	57%	19% ^d	50-150%
	13C2-PFDoDA	47% ^e	15% ^d	50-150%
	13C2-PFTeDA	41%	28% ^d	40-150%
	13C3-PFBS	90%	91%	50-150%
	13C3-PFHxS	102%	93%	50-150%
	13C8-PFOS	91%	63%	50-150%
	13C8-FOSA	89%	69%	30-140%
	d3-MeFOSAA	72%	27% ^d	50-150%
	13C2-4:2FTS	91%	91%	50-150%
	13C2-6:2FTS	113%	95%	50-150%
	13C2-8:2FTS	84%	49% ^d	50-150%

(a) Confirmation run.

(b) Associated ID Standard outside control limits due to matrix interference.

(c) Associated BS recovery outside control limits.

(d) Outside control limits.

(e) Outside control limits due to matrix interference. Confirmed by re-extraction and reanalysis beyond hold time.

U = Not detected LOD = Limit of Detection
 LOQ = Limit of Quantitation DL = Detection 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

[illegible]

[X] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5307
[] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1657

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

REVIEWED 4/1/19

1159138_PFCs_040119.xls

FA62921: Chain of Custody
Page 1 of 3

SGS Sample Receipt Summary

Job Number: FA62921

Client: SGS

Project: 1199138

Date / Time Received: 4/2/2019 9:00:00 AM

Delivery Method: FED EX

Airbill #s: 1002239930160003281100813778334082

Therm ID: IR 1;

Therm CF: 0.4;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (4.0);

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?

☒ ☐
☒ ☐
☒ ☐
Intact
☒ ☐
☒ ☐
☐ ☐ ☒
☐ ☒ ☒
☐ ☐ ☒
☐ ☐ ☒
☐ ☐ ☒
☐ ☐ ☒

Number of 5035 Field Kits:

pH 10-12 219813A

Number of Lab Filtered Metals:

Other: (Specify)

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP

Date: 4/2/2019 9:00:00 AM

Reviewer:

Date:

FA62921: Chain of Custody

Page 2 of 3

Job Change Order: FA62921

Requested Date:	4/9/2019	Received Date:	4/2/2019
Account Name:	SGS North America, Inc	Due Date:	4/16/2019
Project Description:	1199138	Deliverable:	COMMBN
CSR:	AC	TAT (Days):	7

=====

Sample #:	FA62921-1	Change:	
Dept:			Please report the DOD list of 24 PFAS compounds.
TAT:	7		

2142 STANDARD-01

=====

FA62921: Chain of Custody
Page 3 of 3

Above Changes Per: Juliue Shumway

Date/Time: 4/9/2019 2:35:21 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Instrument Blank

Page 1 of 2

Job Number: FA62921

Account: SGS/KA SGS North America, Inc

Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q459-IBLK	2Q28837.D	1	04/10/19	NG	n/a	n/a	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0015	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.0015	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.0010	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0040	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0015	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.0010	ug/l	
754-91-6	PFOSA	ND	0.0040	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.020	0.0040	ug/l	
2991-50-6	EtFOSAA	ND	0.020	0.0040	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0080	0.0020	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 30-140%
	13C5-PFPcA	101% 40-140%
	13C5-PFHxA	104% 50-150%
	13C4-PFHpA	102% 50-150%
	13C8-PFOA	102% 50-150%
	13C9-PFNA	103% 50-150%
	13C6-PFDA	104% 50-150%
	13C7-PFUnDA	102% 50-150%

Instrument Blank

Page 2 of 2

Job Number: FA62921

Account: SGSAKA SGS North America, Inc

Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q459-IBLK	2Q28837.D	1	04/10/19	NG	n/a	n/a	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	104% 50-150%
	13C2-PFTeDA	100% 40-150%
	13C3-PFBS	100% 50-150%
	13C3-PFHxS	100% 50-150%
	13C8-PFOS	102% 50-150%
	13C8-FOSA	104% 30-140%
	d3-MeFOSAA	101% 50-150%
	13C2-4:2FTS	95% 50-150%
	13C2-6:2FTS	94% 50-150%
	13C2-8:2FTS	94% 50-150%

Method Blank Summary

Page 1 of 2

Job Number: FA62921

Account: SGS/KA SGS North America, Inc

Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-MB	2Q28880.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0077	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0038	0.0014	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0038	0.00096	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0038	0.00096	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0038	0.00096	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0038	0.00096	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0038	0.00096	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0038	0.00096	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0038	0.0014	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0038	0.00096	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0038	0.00096	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0038	0.00096	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0038	0.00096	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0038	0.00096	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0038	0.00096	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0038	0.0014	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0038	0.00096	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0038	0.00096	ug/l	
754-91-6	PFOSA	ND	0.0038	0.00096	ug/l	
2355-31-9	MeFOSAA	ND	0.019	0.0038	ug/l	
2991-50-6	EtFOSAA	ND	0.019	0.0038	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.0077	0.0019	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.0077	0.0019	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.0077	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 30-140%
	13C5-PFPeA	104% 40-140%
	13C5-PFHxA	106% 50-150%
	13C4-PFHpA	99% 50-150%
	13C8-PFOA	103% 50-150%
	13C9-PFNA	117% 50-150%
	13C6-PFDA	111% 50-150%
	13C7-PFUnDA	81% 50-150%

Method Blank Summary

Page 2 of 2

Job Number: FA62921
Account: SGSAKA SGS North America, Inc
Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-MB	2Q28880.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	ID Standard Recoveries	Limits
	13C2-PFDoDA	78% 50-150%
	13C2-PFTeDA	77% 40-150%
	13C3-PFBS	100% 50-150%
	13C3-PFHxS	100% 50-150%
	13C8-PFOS	106% 50-150%
	13C8-FOSA	102% 30-140%
	d3-MeFOSAA	93% 50-150%
	13C2-4:2FTS	100% 50-150%
	13C2-6:2FTS	95% 50-150%
	13C2-8:2FTS	100% 50-150%

Blank Spike Summary

Page 1 of 2

Job Number: FA62921

Account: SGSAKA SGS North America, Inc

Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-BS	2Q28879.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.0769	0.0680	88	70-130
2706-90-3	Perfluoropentanoic acid	0.0769	0.0646	84	70-130
307-24-4	Perfluorohexanoic acid	0.0769	0.0657	85	70-130
375-85-9	Perfluoroheptanoic acid	0.0769	0.0680	88	71-130
335-67-1	Perfluorooctanoic acid	0.0769	0.0668	87	74-130
375-95-1	Perfluorononanoic acid	0.0769	0.0657	85	76-130
335-76-2	Perfluorodecanoic acid	0.0769	0.0652	85	70-130
2058-94-8	Perfluoroundecanoic acid	0.0769	0.0658	86	70-130
307-55-1	Perfluorododecanoic acid	0.0769	0.0662	86	70-130
72629-94-8	Perfluorotridecanoic acid	0.0769	0.0670	87	70-139
376-06-7	Perfluorotetradecanoic acid	0.0769	0.0699	91	70-130
375-73-5	Perfluorobutanesulfonic acid	0.0769	0.0632	82	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.0769	0.0644	84	70-130
355-46-4	Perfluorohexanesulfonic acid	0.0769	0.0681	89	74-130
375-92-8	Perfluoroheptanesulfonic acid	0.0769	0.0721	94	74-130
1763-23-1	Perfluorooctanesulfonic acid	0.0769	0.0656	85	70-130
68259-12-1	Perfluorononanesulfonic acid	0.0769	0.0605	79	70-130
335-77-3	Perfluorodecanesulfonic acid	0.0769	0.0462	60*	70-130
754-91-6	PFOSA	0.0769	0.0678	88	70-131
2355-31-9	MeFOSAA	0.0769	0.0656	85	70-130
2991-50-6	EtFOSAA	0.0769	0.0651	85	70-130
757124-72-44:2	Fluorotelomer sulfonate	0.0769	0.0687	89	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.0769	0.0668	87	70-133
39108-34-4	8:2 Fluorotelomer sulfonate	0.0769	0.0683	89	70-130

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	119%	30-140%
	13C5-PFPeA	120%	40-140%
	13C5-PFHxA	119%	50-150%
	13C4-PFHpA	111%	50-150%
	13C8-PFOA	113%	50-150%
	13C9-PFNA	133%	50-150%
	13C6-PFDA	127%	50-150%
	13C7-PFUnDA	98%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 2

Job Number: FA62921

Account: SGSAKA SGS North America, Inc

Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-BS	2Q28879.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	ID Standard Recoveries	BSP	Limits
	13C2-PFDoDA	95%	50-150%
	13C2-PFTeDA	89%	40-150%
	13C3-PFBS	116%	50-150%
	13C3-PFHxS	112%	50-150%
	13C8-PFOS	122%	50-150%
	13C8-FOSA	108%	30-140%
	d3-MeFOSAA	111%	50-150%
	13C2-4:2FTS	119%	50-150%
	13C2-6:2FTS	116%	50-150%
	13C2-8:2FTS	122%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 2

Job Number: FA62921
Account: SGS/KA SGS North America, Inc
Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-MS	2Q28914.D	100	04/11/19	NG	04/06/19	OP74498	S2Q459
JC85617-2	2Q28888.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459
JC85617-2 ^a	2Q28913.D	100	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	Compound	JC85617-2 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.177		0.08	0.453	345* ^b	70-130
2706-90-3	Perfluoropentanoic acid	0.646	E	0.08	1.21	705* ^b	70-130
307-24-4	Perfluorohexanoic acid	0.325		0.08	0.681	445* ^b	70-130
375-85-9	Perfluoroheptanoic acid	0.231		0.08	0.520	361* ^b	71-130
335-67-1	Perfluorooctanoic acid	0.0184		0.08	0.166	185*	74-130
375-95-1	Perfluorononanoic acid	0.00294	J	0.08	0.126	154*	76-130
335-76-2	Perfluorodecanoic acid	0.00195	J	0.08	0.122	150*	70-130
2058-94-8	Perfluoroundecanoic acid	ND		0.08	0.108	135*	70-130
307-55-1	Perfluorododecanoic acid	ND		0.08	ND	0*	70-130
72629-94-8	Perfluorotridecanoic acid	ND		0.08	ND	0*	70-139
376-06-7	Perfluorotetradecanoic acid	ND		0.08	ND	0*	70-130
375-73-5	Perfluorobutanesulfonic acid	0.374		0.08	0.779	506* ^b	73-130
2706-91-4	Perfluoropentanesulfonic acid	0.00437		0.08	0.128	155*	70-130
355-46-4	Perfluorohexanesulfonic acid	0.0137		0.08	0.153	174*	74-130
375-92-8	Perfluoroheptanesulfonic acid	0.0227		0.08	0.161	173*	74-130
1763-23-1	Perfluorooctanesulfonic acid	18.3 ^c		0.08	20.6	2875* ^b	70-130
68259-12-1	Perfluorononanesulfonic acid	0.00916		0.08	0.107	122	70-130
335-77-3	Perfluorodecanesulfonic acid	ND		0.08	ND	0*	70-130
754-91-6	PFOSA	ND		0.08	0.115	144*	70-131
2355-31-9	MeFOSAA	ND		0.08	ND	0*	70-130
2991-50-6	EtFOSAA	ND		0.08	ND	0*	70-130
757124-72-44:2	Fluorotelomer sulfonate	ND		0.08	ND	0*	70-130
27619-97-2	6:2 Fluorotelomer sulfonate	0.391		0.08	1.04	811* ^b	70-133
39108-34-4	8:2 Fluorotelomer sulfonate	ND		0.08	ND	0*	70-130

CAS No.	ID Standard Recoveries	MS	JC85617-2	JC85617-2	Limits
	13C4-PFBA	110%			30-140%
	13C5-PFPcA	112%			40-140%
	13C5-PFHxA	115%			50-150%
	13C4-PFHpA	125%			50-150%
	13C8-PFOA	124%	123%	120%	50-150%
	13C9-PFNA	133%	83%	129%	50-150%
	13C6-PFDA	127%			50-150%
	13C7-PFUnDA	104%			50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Page 2 of 2

Job Number: FA62921
Account: SGSAKA SGS North America, Inc
Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-MS	2Q28914.D	100	04/11/19	NG	04/06/19	OP74498	S2Q459
JC85617-2	2Q28888.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459
JC85617-2 ^a	2Q28913.D	100	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	ID Standard Recoveries	MS	JC85617-2	JC85617-2	Limits
	13C2-PFDoDA	113%			50-150%
	13C2-PFTeDA	116%			40-150%
	13C3-PFBS	108%			50-150%
	13C3-PFHxS	112%			50-150%
	13C8-PFOS	118%	48%* d	115%	50-150%
	13C8-FOSA	115%			30-140%
	d3-MeFOSAA	122%			50-150%
	13C2-4:2FTS	101%			50-150%
	13C2-6:2FTS	108%			50-150%
	13C2-8:2FTS	138%			50-150%

- (a) Dilution required due to matrix interference (internal standard failure).
(b) Outside control limits due to high level in sample relative to spike amount.
(c) Result is from Run #2.
(d) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 2

Job Number: FA62921
Account: SGSAKA SGS North America, Inc
Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-DUP	2Q28905.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459
FA63050-1	2Q28904.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	Compound	FA63050-1 ug/l	DUP Q	ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.00432	J	0.00526	J	20	30
2706-90-3	Perfluoropentanoic acid	ND		ND		nc	30
307-24-4	Perfluorohexanoic acid	ND		ND		nc	30
375-85-9	Perfluoroheptanoic acid	ND		ND		nc	30
335-67-1	Perfluorooctanoic acid	0.00312	J	0.00341	J	9	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	ND		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	ND		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	ND		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	ND		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0324		0.0311		4	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	FA63050-1	Limits
	13C4-PFBA	106%	114%	30-140%
	13C5-PFPcA	106%	116%	40-140%
	13C5-PFHxA	109%	118%	50-150%
	13C4-PFHpA	142%	117%	50-150%
	13C8-PFOA	141%	126%	50-150%
	13C9-PFNA	141%	150%	50-150%
	13C6-PFDA	118%	124%	50-150%
	13C7-PFUnDA	91%	92%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Page 2 of 2

Job Number: FA62921
Account: SGSAKA SGS North America, Inc
Project: 1199138

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74498-DUP	2Q28905.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459
FA63050-1	2Q28904.D	1	04/11/19	NG	04/06/19	OP74498	S2Q459

The QC reported here applies to the following samples:

Method: EPA 537M BY ID

FA62921-1

CAS No.	ID Standard Recoveries	DUP	FA63050-1	Limits
	13C2-PFDoDA	87%	90%	50-150%
	13C2-PFTeDA	81%	88%	40-150%
	13C3-PFBS	107%	113%	50-150%
	13C3-PFHxS	110%	115%	50-150%
	13C8-PFOS	118%	121%	50-150%
	13C8-FOSA	99%	113%	30-140%
	d3-MeFOSAA	108%	104%	50-150%
	13C2-4:2FTS	90%	96%	50-150%
	13C2-6:2FTS	154%* a	113%	50-150%
	13C2-8:2FTS	119%	117%	50-150%

(a) Outside control limits.

* = Outside of Control Limits.