



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

April 25, 2019

NORTECH, Inc.

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Suite B
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907.586.6813
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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 0.00804 micrograms per liter (µg/L). This combined result is below the current LHA.

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: 1199069

Laboratory Report of Analysis

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

Report Number: **1199069**

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
09:54:17 -08'00'

Jennifer Dawkins
Project Manager
Jennifer.Dawkins@sgs.com

Date

Case Narrative

SGS Client: **Nortech**
SGS Project: **1199069**
Project Name/Site: **PFC-Well Search Napa-Van Horn**
Project Contact: **Scott Hummel**

Refer to sample receipt form for information on sample condition.

(1199069001) 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 8:37:04AM

Sample Summary

| <u>Client Sample ID</u> | <u>Lab Sample ID</u> | <u>Collected</u> | <u>Received</u> | <u>Matrix</u> |
|-------------------------|----------------------|------------------|-----------------|-------------------------------|
| ██████████ | 1199069001 | 02/26/2019 | 03/01/2019 | Water (Surface, Eff., Ground) |

Method

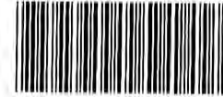
Method Description

Print Date: 03/15/2019 8:37:07AM



SGS North America Inc. CHAIN OF CUSTODY RECORD

1199069



Locations Nationwide

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

www.us.sgs.com

Form with sections 1-5, including client info (Nortech), project details (Napa-Van Horn), sample table (DA-B), and chain of custody signatures.

ARC: 3-6 D56 CS: 1F, 1B



1199069



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 <input checked="" type="radio"/> N/A <input checked="" type="radio"/> Yes No <input checked="" type="radio"/> N/A | <input checked="" type="checkbox"/> 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? Cooler ID: _____ @ 7.3°C w/Therm. ID: <u>057</u> 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. | Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A | <input type="checkbox"/> Exemption permitted if chilled & collected <8hrs ago <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i> |
| Delivery Method: <input checked="" type="radio"/> Client (hand carried) Other: _____ | Tracking/AB# : Or see attached Or <input checked="" type="radio"/> 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 Vermiculite Other: _____ | <input checked="" type="radio"/> Yes No N/A | <i>Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.</i> |
| Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? | Yes No <input checked="" type="radio"/> N/A | |
| For RUSH/SHORT Hold Time , were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable? | Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A | |
| Additional notes (if applicable): | | |

Profile #: 367417

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



e-Sample Receipt Form

SGS Workorder #:

1199069



1 1 9 9 0 6 9

| 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 | |
| <div style="border: 1px solid black; padding: 2px; display: inline-block;">N/A</div> **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> |
|---------------------|--------------------------|----------------------------|---------------------|---------------------|----------------------------|
| 1199069001-A | No Preservative Required | OK | | | |
| 1199069001-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

1199069

SGS Job Number: FA62034

Sampling Date: 02/26/19

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: **24**



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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Sample Summary

SGS North America, Inc

Job No: FA62034

1199069

| Sample Number | Collected | | Matrix Received | Code Type | Client Sample ID |
|---------------|-----------|----------|-----------------|-----------|------------------|
| | Date | Time By | | | |
| FA62034-1 | 02/26/19 | 13:00 JS | 03/05/19 | AQ Water | |

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS North America, Inc

Job No FA62034

Site: 1199069

Report Date 3/13/2019 11:35:45

1 Sample was collected on 02/26/2019 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 FA62034. 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, Perfluoronanesulfonic 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.

FA62034-1 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: FA62034
Account: SGS North America, Inc
Project: 1199069
Collected: 02/26/19



| Lab Sample ID | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|------------------------------|------------------|-----------------|--------|-----|-------|----------------|
| FA62034-1 | [REDACTED] | 1 | | | | |
| Perfluorohexanesulfonic acid | | 0.00892 | 0.0040 | | ug/l | EPA 537M BY ID |
| Perfluorooctanesulfonic acid | | 0.00404 | 0.0040 | | ug/l | EPA 537M BY ID |

Sample Results

Report of Analysis

Report of Analysis

| | |
|---|--------------------------------|
| Client Sample ID: ██████████ | Date Sampled: 02/26/19 |
| Lab Sample ID: FA62034-1 | Date Received: 03/05/19 |
| Matrix: AQ - Water | Percent Solids: n/a |
| Method: EPA 537M BY ID EPA 537 MOD | |
| Project: 1199069 | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 3Q1668.D | 1 | 03/07/19 19:02 | NAF | 03/06/19 09:00 | OP74054 | S3Q46 |
| 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 | 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 | 0.00892 | 0.0040 | ug/l | |
| 375-92-8 | Perfluoroheptanesulfonic acid | ND | 0.0040 | ug/l | |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.00404 | 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 | 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 |

4.1
4

Report of Analysis

| | | |
|---|--------------------------------|--|
| Client Sample ID: [REDACTED] | | |
| ID: FA62034-1 | Date Sampled: 02/26/19 | |
| Matrix: AQ - Water | Date Received: 03/05/19 | |
| Method: EPA 537M BY ID EPA 537 MOD | Percent Solids: n/a | |
| Project: 1199069 | | |

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 | 82% | | 30-140% |
| | 13C5-PFPeA | 87% | | 40-140% |
| | 13C5-PFHxA | 95% | | 50-150% |
| | 13C4-PFHpA | 100% | | 50-150% |
| | 13C8-PFOA | 113% | | 50-150% |
| | 13C9-PFNA | 108% | | 50-150% |
| | 13C6-PFDA | 86% | | 50-150% |
| | 13C7-PFUnDA | 78% | | 50-150% |
| | 13C2-PFDoDA | 69% | | 50-150% |
| | 13C2-PFTeDA | 63% | | 40-150% |
| | 13C3-PFBS | 86% | | 50-150% |
| | 13C3-PFHxS | 82% | | 50-150% |
| | 13C8-PFOS | 63% | | 50-150% |
| | 13C8-FOSA | 79% | | 30-140% |
| | d3-MeFOSAA | 84% | | 50-150% |
| | 13C2-4:2FTS | 97% | | 50-150% |
| | 13C2-6:2FTS | 122% | | 50-150% |
| | 13C2-8:2FTS | 92% | | 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

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



SGS North America Inc.
CHAIN OF CUSTODY RECORD



Locations Nationwide

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

FA62034

| | | | | | | | | | | | |
|--|-----------------------|-------------------------------|-----------|---|--------------------|---|--------------------------------------|---|-----|--------------------------------|-------------|
| 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: 1199069 | | PWSID#: | | CONTAINER | Preservative Used: | None | EPA 537 - OSM 6, 1, 24 Compound List | MS | MSD | SGS lab # | Location ID |
| REPORTS TO: | | E-MAIL: Julie.Shumway@sgs.com | | | | | | | | | |
| INVOICE TO: SGS - Alaska | | QUOTE #: 1199069 | | | | | | | | | |
| P.O. #: | | | | | | | | | | | |
| RESERVED for lab use | SAMPLE IDENTIFICATION | DATE mm/dd/yy | TIME HHMM | MATRIX/MATRIX | 2 | G = | X | | | 1199069001 | |
| | | 2/26/2019 | 13:00 | Water | | | | | | | |
| Relinquished By: (1) <i>[Signature]</i> | | Date | Time | Received By: <i>UPS</i> | | DOD Project? NO | | Report to DL (J Flags)? NO | | Data Deliverable Requirements: | |
| Relinquished By: (2) <i>UPS</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>1315</i> | | Report all analyses for Soils/Waters in mg/L or mg/Kg, where possible | | Temp Blank °C: <i>3.6</i> | | | |
| | | | | | | or Ambient [] | | Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT | | | |

[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

1199069_PFC_03.04.19.xls

5.1
5



SGS Sample Receipt Summary

Job Number: FA62034

Client: SGS

Project: 1199069

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 IR Gun
- 5. Cooler media 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

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 Intact
- 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?

Misc. Information

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

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

Reviewer: _____

Date: _____

5.1
5

FA62034: 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

Job Number: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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

Instrument Blank

Job Number: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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

Job Number: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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% |

Instrument Blank

Job Number: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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% |

6.1.3
6

Instrument Blank

Job Number: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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.

Matrix Spike Summary

Job Number: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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.

Duplicate Summary

Job Number: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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: FA62034
Account: SGSAKA SGS North America, Inc
Project: 1199069

| 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

FA62034-1

| 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.