



## Analytical Laboratory Services

### Data Verification Checklist

Project Number:

P18-067 Nordale Yard Drinking Water Wells

Verifier's Signature and Date:

*Bobby Grable November 19, 2018*

Data Rating (A=acceptable,  
Q=qualified or R=rejected):

*A*

YES	NO	N/A	Sample Collection
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☒ ☐ ☐ Did the sample collection comply with the regulatory method?

☐ ☒ ☐ Were all samples properly preserved?

Comments and attachments: Samples 2A and B were received in a torn PFAS bag. All samples were single bagged with the proper PFAS bags rather than double bagged. All samples were double bagged in ziplock bags.

YES	NO	N/A	Sample Custody and Sample Integrity Maintenance
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☒ ☐ ☐ Is the chain of custody (COC) form complete and accurate?

☒ ☐ ☐ Do COC dates and custody seals reflect unbroken custody?

☒ ☐ ☐ Are all samples on the COC accounted for?

☒ ☐ ☐ Were the samples within the method specified temperature range upon arrival at the contract laboratory?

Comments and attachments: None

YES	NO	N/A	Sample Analysis
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☒ ☐ ☐ Did the lab complete the correct analytical methods as requested on the COC?

☒ ☐ ☐ Were the method specific holding times met?

☒ ☐ ☐ Is the method sensitivity (LOQ/RL) adequate for data use?

☒ ☐ ☐ Does the case narrative support the data as meeting quality objectives for the project?

☒ ☐ ☐ Are all the quality control sample results present and do they indicate that the data meets quality objectives?

☒ ☐ ☐ Do the results make sense?

Comments and attachments: PFAS per EPA 537 were analyzed by SGS of Orlando, FL.

*Note: SGS- Orlando ran EPA 537 MODIFIED, an isotope dilution method. mmm 11-27-18*

YES	NO	N/A	Documentation
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☒ ☐ ☐ Is the data package complete including custody tracking, sample check-in, sample results, QC results, and a signed approval page?

Comments and attachments: None

Instruction: Complete page 1 for all projects. If appropriate, complete page 2. Unless page 2 is required, only submit page 1.



## Analytical Laboratory Services

### Data Verification Checklist

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Data Rating (A=acceptable,  
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**Comments and attachments:** Samples 2A and B were received in a torn PFAS bag. All samples were single bagged with the proper PFAS bags rather than double bagged. All samples were double bagged in ziplock bags.

YES	NO	N/A	Sample Custody and Sample Integrity Maintenance
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☒ ☐ ☐ Is the chain of custody (COC) form complete and accurate?

☒ ☐ ☐ Do COC dates and custody seals reflect unbroken custody?

☒ ☐ ☐ Are all samples on the COC accounted for?

☒ ☐ ☐ Were the samples within the method specified temperature range upon arrival at the contract laboratory?

**Comments and attachments:** None

YES	NO	N/A	Sample Analysis
-----	----	-----	-----------------

☒ ☐ ☐ Did the lab complete the correct analytical methods as requested on the COC?

☒ ☐ ☐ Were the method specific holding times met?

☒ ☐ ☐ Is the method sensitivity (LOQ/RL) adequate for data use?

☒ ☐ ☐ Does the case narrative support the data as meeting quality objectives for the project?

☒ ☐ ☐ Are all the quality control sample results present and do they indicate that the data meets quality objectives?

☒ ☐ ☐ Do the results make sense?

**Comments and attachments:** PFAS per EPA 537 were analyzed by SGS of Orlando, FL.

YES	NO	N/A	Documentation
-----	----	-----	---------------

☒ ☐ ☐ Is the data package complete including custody tracking, sample check-in, sample results, QC results, and a signed approval page?

**Comments and attachments:** None

**Instruction:** Complete page 1 for all projects. If appropriate, complete page 2. Unless page 2 is required, only submit page 1.

**P18-067 Nordale Yard Drinking Water – East and West Wells October 25, 2018**



**P18-067-(01 & 02) Nordale Yard West Drinking Water Well October 25, 2018 17:15**

A sample of water was collected from the Nordale Yard West Drinking Water Well. The well was flushed from 14:30 to 17:10 using the hose bib located at the south side of the well house. A hose found next to the hose bib was used to run the water to the edge of the pad. A flow rate of 5 gallons per minute was measured at the beginning and at the end of the flush period by measuring the time it took to fill a 5 gallon bucket.



Assuming the flow rate stayed constant through the entire 160 minute flush, a total of 800 gallons of water was flushed from the well prior to sampling. Per an email from Janine Boyette, the well was drilled to 100'. At a volume of 1.5 gallon per feet of 6" casing, the total volume of the well casing was 150 gallons, so that an 800 gallon flush represented 5.3 liquid full well casing volumes.

The hose was removed from the bib and another few gallons of water flushed from the tap prior to collecting samples. The field blank with lid off was placed on top of the cooler next to the empty sample containers as all the sample containers were filled. Cotton clothing washed and dried without using fabric softener or dryer sheets was worn. Clean nitrile gloves were worn when handling the sample containers. The water had a very slight brown color and cold. The weather was 40 deg. F, overcast skies, no precipitation and calm wind.

Following sampling, the valve inside the well house was closed and the hose bib valve opened to allow the water to drain from the outside segment of line.

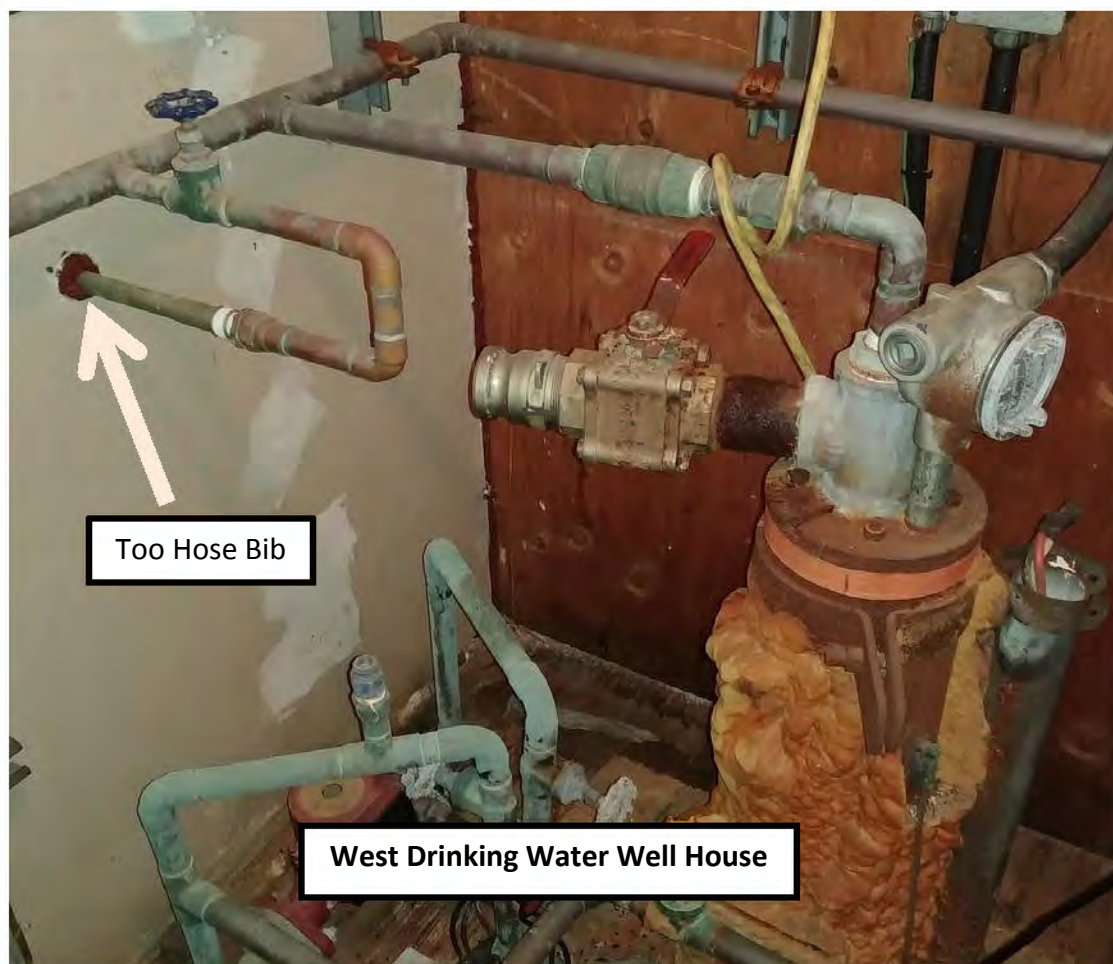




Photo of the hose bib on the south side of the Nordale Yard West Drinking Water Well House



**P18-067-(03 & 04) Nordale Yard East Water Well October 25, 2018 19:20**

A water sample was collected from the Nordale Yard East Water Well. The well is currently inactive. The well was flushed using a Waterra Hydrolift-2 actuator connected to a new 5/8" OD x 1/2" ID HDPE tubing with a D-25 Waterra foot valve made from acetal thermoplastic. Approximately 20' of tube (measured against 20' long lab truck after sampling was completed) was inserted down the well casing. The water level in the casing was visible and appeared to be about 10' below the surface, dropping 1' to 2' in the course of flushing the well.

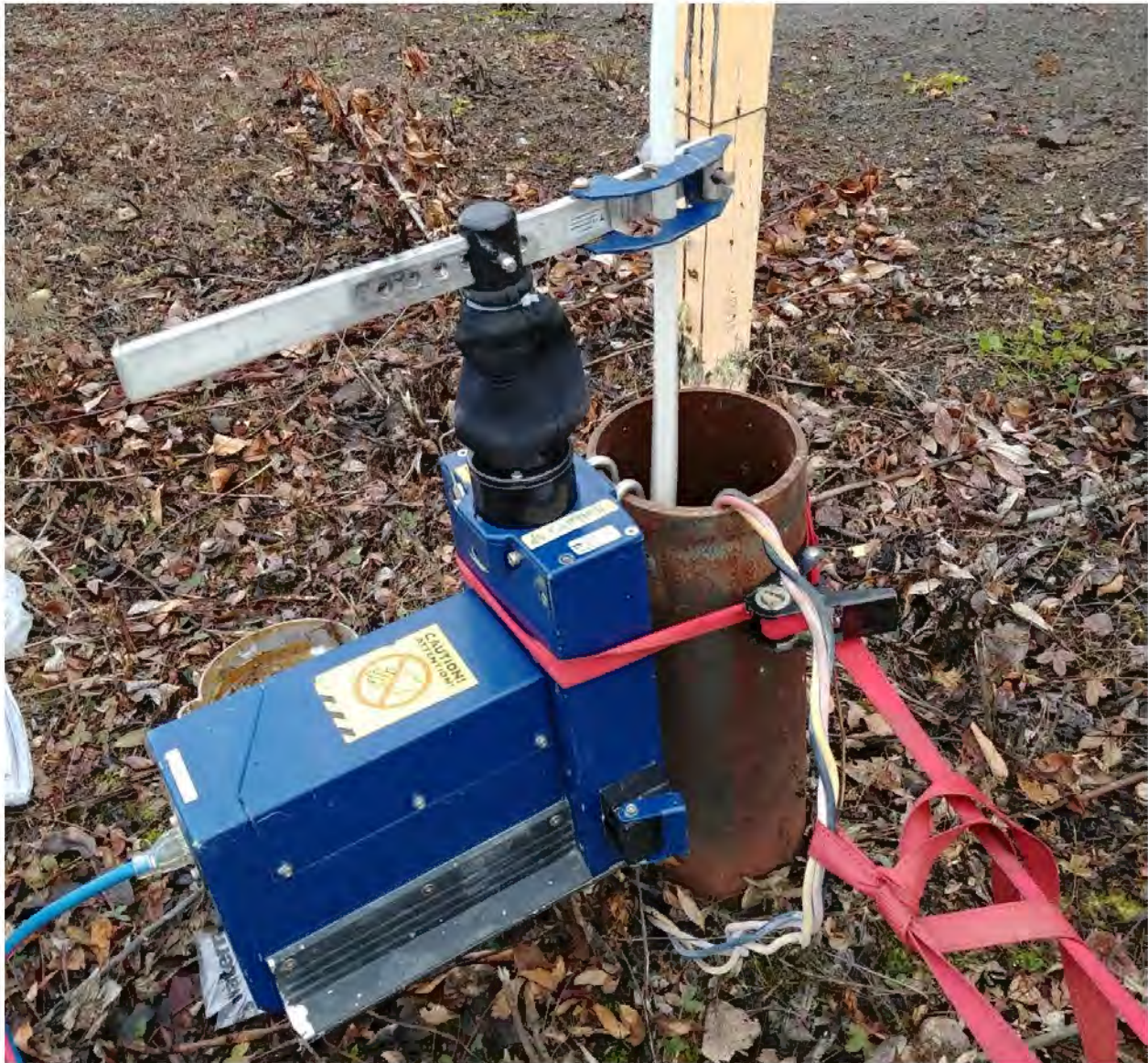


Photo of Waterra Hydrolift-2 Actuator attached to Nordale Yard East Water Well

Flushing of the East water well commenced at 15:08. An initial flow rate of 1.3 gal/min was determined by measuring the time it took to fill a 5 gallon bucket. The water was a dark brown, rusty color. At around 17:00 the measured flow rate was 1.0 gal/min and the water had turned a lighter brown rusty color. At 17:47, the Honda generator used to power the actuator ran out of gas.

While waiting for baseline to gas up the generator, it was noticed that the tubing had been abraded near where it entered the casing. To move the wear area, the tubing was disconnected from the actuator and pulled up approximately 1' and re-clamped to the actuator. When the actuator was turned back on, no water flowed from the tubing. The tubing was pulled from the well and the foot valve was found to be severely worn where it rubbed against the casing. The foot valve was replaced and the tubing reinserted. At 18:10, water was flowing out of the tubing at a rate of 1.0 gal/min. The well was flushed for another 60 minutes prior to collecting samples.

Per an email from Janine Boyette, the well was drilled to 40' and the water level measured at 12' below the surface, according well with observations. Assuming 30' of water column at 1.5 gallons per foot, the total volume in the casing is approximately 45 gallons. The well was flushed for an accumulated 219 minutes, equating to approximately 219 gallons or 4.8 well casing volumes.

Prior to filling sample containers, the actuator speed was slowed. Cotton clothing washed and dried without using fabric softener or dryer sheets was worn. Clean nitrile gloves were worn when handling the sample containers. The water was cold and a slight brown color with no noticeable odor.

During sampling the weather was 38 degrees F, overcast skies, no precipitation, and calm wind. It was night time, so the truck head lights were used to provide light when filling the sample containers.

Steve Leider





## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** SGS North America, Inc

**Job No** FA58985

**Site:** 1189909

**Report Date** 11/16/2018 6:10:48

2

4 Samples, 1 Field Blank were collected on 10/25/2018 and were received at SGS North America Inc - Orlando on 11/01/2018 properly preserved, at 3.2 Deg. C and intact. These Samples received an SGS Orlando job number of FA58985. 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 QSM5.1 B-15

**Matrix:** AQ

**Batch ID:** OP72621

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA59097-4DUP, FA59097-4MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

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

*Narrative prepared by:*

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*Ariel Hartney, Client Services (signature on file)*

## Report of Analysis

Page 1 of 2

<b>Client Sample ID:</b>	P18-067-01		
<b>Lab Sample ID:</b>	FA58985-1	<b>Date Sampled:</b>	10/25/18
<b>Matrix:</b>	AQ - Water	<b>Date Received:</b>	11/01/18
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	1189909		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q23879.D	1	11/15/18 22:55	NG	11/14/18 08:00	OP72621	S2Q369
Run #2							

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

## PFAS List

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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## PERFLUOROALKYLCARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.00428	0.0080	0.0040	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0204	0.0040	0.0020	0.0015	ug/l	
307-24-4	Perfluorohexanoic acid	0.0139	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.00483	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.00370	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	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	0.00395	0.0040	0.0020	0.0010	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.00707	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0429	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	

## PERFLUOROOCETANESULFONAMIDES

754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
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## PERFLUOROOCETANESULFONAMIDOACETIC 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	0.00941	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

<b>Client Sample ID:</b>	P18-067-01	<b>Date Sampled:</b>	10/25/18
<b>Lab Sample ID:</b>	FA58985-1	<b>Date Received:</b>	11/01/18
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD		
<b>Project:</b>	1189909		

PFAS List

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	75%		50-150%
	13C5-PFPeA	92%		50-150%
	13C5-PFHxA	105%		50-150%
	13C4-PFHpA	110%		50-150%
	13C8-PFOA	118%		50-150%
	13C9-PFNA	128%		50-150%
	13C6-PFDA	138%		50-150%
	13C7-PFUnDA	106%		50-150%
	13C2-PFDoDA	96%		50-150%
	13C2-PFTeDA	50%		50-150%
	13C3-PFBS	87%		50-150%
	13C3-PFHxS	100%		50-150%
	13C8-PFOS	94%		50-150%
	13C8-FOSA	101%		50-150%
	d3-MeFOSAA	102%		50-150%
	13C2-4:2FTS	104%		50-150%
	13C2-6:2FTS	115%		50-150%
	13C2-8:2FTS	113%		50-150%

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## Report of Analysis

Page 1 of 2

<b>Client Sample ID:</b>	P18-067-02		
<b>Lab Sample ID:</b>	FA58985-2	<b>Date Sampled:</b>	10/25/18
<b>Matrix:</b>	AQ - Water	<b>Date Received:</b>	11/01/18
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	1189909		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q23880.D	1	11/15/18 23:11	NG	11/14/18 08:00	OP72621	S2Q369
Run #2							

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

## PFAS List

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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## PERFLUOROALKYLCARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.00395	0.0080	0.0040	0.0020	ug/l	J
2706-90-3	Perfluoropentanoic acid	0.0198	0.0040	0.0020	0.0015	ug/l	
307-24-4	Perfluorohexanoic acid	0.0138	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.00490	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.00392	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	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	0.00390	0.0040	0.0020	0.0010	ug/l	J
2706-91-4	Perfluoropentanesulfonic acid	0.00658	0.0040	0.0020	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0429	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	

## PERFLUOROOCETANESULFONAMIDES

754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
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## PERFLUOROOCETANESULFONAMIDOACETIC 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	0.00921	0.0080	0.0040	0.0020	ug/l	

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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P18-067-02	Date Sampled:	10/25/18
Lab Sample ID:	FA58985-2	Date Received:	11/01/18
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD		
Project:	1189909		

PFAS List

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	73%		50-150%
	13C5-PFPeA	89%		50-150%
	13C5-PFHxA	100%		50-150%
	13C4-PFHpA	105%		50-150%
	13C8-PFOA	114%		50-150%
	13C9-PFNA	123%		50-150%
	13C6-PFDA	126%		50-150%
	13C7-PFUnDA	98%		50-150%
	13C2-PFDoDA	94%		50-150%
	13C2-PFTeDA	57%		50-150%
	13C3-PFBS	84%		50-150%
	13C3-PFHxS	93%		50-150%
	13C8-PFOS	86%		50-150%
	13C8-FOSA	95%		50-150%
	d3-MeFOSAA	95%		50-150%
	13C2-4:2FTS	99%		50-150%
	13C2-6:2FTS	110%		50-150%
	13C2-8:2FTS	105%		50-150%

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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 1 of 2

<b>Client Sample ID:</b>	FIELD BLANK-1			<b>Date Sampled:</b>	10/25/18
<b>Lab Sample ID:</b>	FA58985-3			<b>Date Received:</b>	11/01/18
<b>Matrix:</b>	AQ - Field Blank Water			<b>Percent Solids:</b>	n/a
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD				
<b>Project:</b>	1189909				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q23881.D	1	11/15/18 23:27	NG	11/14/18 08:00	OP72621	S2Q369
Run #2							

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

## PFAS List

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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## PERFLUOROALKYLCARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	
307-24-4	Perfluorohexanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
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	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	0.0020 U	0.0040	0.0020	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	

## PERFLUOROOCETANESULFONAMIDES

754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l	
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## PERFLUOROOCETANESULFONAMIDOACETIC 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

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E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



Report of Analysis

<b>Client Sample ID:</b>	FIELD BLANK-1	<b>Date Sampled:</b>	10/25/18
<b>Lab Sample ID:</b>	FA58985-3	<b>Date Received:</b>	11/01/18
<b>Matrix:</b>	AQ - Field Blank Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD		
<b>Project:</b>	1189909		

PFAS List

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	100%		50-150%
	13C5-PFPeA	99%		50-150%
	13C5-PFHxA	100%		50-150%
	13C4-PFHpA	103%		50-150%
	13C8-PFOA	114%		50-150%
	13C9-PFNA	126%		50-150%
	13C6-PFDA	120%		50-150%
	13C7-PFUnDA	112%		50-150%
	13C2-PFDoDA	113%		50-150%
	13C2-PFTeDA	77%		50-150%
	13C3-PFBS	102%		50-150%
	13C3-PFHxS	99%		50-150%
	13C8-PFOS	95%		50-150%
	13C8-FOSA	118%		50-150%
	d3-MeFOSAA	100%		50-150%
	13C2-4:2FTS	95%		50-150%
	13C2-6:2FTS	107%		50-150%
	13C2-8:2FTS	105%		50-150%

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 1 of 2

<b>Client Sample ID:</b>	P18-067-03	<b>Date Sampled:</b>	10/25/18
<b>Lab Sample ID:</b>	FA58985-4	<b>Date Received:</b>	11/01/18
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD		
<b>Project:</b>	1189909		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q23882.D	1	11/15/18 23:43	NG	11/14/18 08:00	OP72621	S2Q369
Run #2							

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2		

## PFAS List

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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## PERFLUOROALKYLCARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0128	0.0083	0.0042	0.0021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0521	0.0042	0.0021	0.0016	ug/l	
307-24-4	Perfluorohexanoic acid	0.0250	0.0042	0.0021	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0204	0.0042	0.0021	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0403	0.0042	0.0021	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.00868	0.0042	0.0021	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0042	0.0021	0.0016	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	

## PERFLUOROALKYLSULFONATES

375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	

## PERFLUOROOCETANESULFONAMIDES

754-91-6	PFOSA	0.0021 U	0.0042	0.0021	0.0010	ug/l	
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## PERFLUOROOCETANESULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	0.0083 U	0.021	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.021	0.0083	0.0042	ug/l	

## FLUOROTELOMER SULFONATES

757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0908	0.0083	0.0042	0.0021	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

<b>Client Sample ID:</b>	P18-067-03	<b>Date Sampled:</b>	10/25/18
<b>Lab Sample ID:</b>	FA58985-4	<b>Date Received:</b>	11/01/18
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD		
<b>Project:</b>	1189909		

## PFAS List

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	78%		50-150%
	13C5-PFPeA	95%		50-150%
	13C5-PFHxA	111%		50-150%
	13C4-PFHpA	117%		50-150%
	13C8-PFOA	125%		50-150%
	13C9-PFNA	134%		50-150%
	13C6-PFDA	142%		50-150%
	13C7-PFUnDA	114%		50-150%
	13C2-PFDoDA	112%		50-150%
	13C2-PFTeDA	73%		50-150%
	13C3-PFBS	89%		50-150%
	13C3-PFHxS	106%		50-150%
	13C8-PFOS	103%		50-150%
	13C8-FOSA	111%		50-150%
	d3-MeFOSAA	108%		50-150%
	13C2-4:2FTS	109%		50-150%
	13C2-6:2FTS	129%		50-150%
	13C2-8:2FTS	122%		50-150%

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 1 of 2

<b>Client Sample ID:</b>	P18-067-04		
<b>Lab Sample ID:</b>	FA58985-5	<b>Date Sampled:</b>	10/25/18
<b>Matrix:</b>	AQ - Water	<b>Date Received:</b>	11/01/18
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	1189909		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q23883.D	1	11/15/18 23:58	NG	11/14/18 08:00	OP72621	S2Q369
Run #2							

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2		

## PFAS List

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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## PERFLUOROALKYLCARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	0.0131	0.0083	0.0042	0.0021	ug/l	
2706-90-3	Perfluoropentanoic acid	0.0521	0.0042	0.0021	0.0016	ug/l	
307-24-4	Perfluorohexanoic acid	0.0242	0.0042	0.0021	0.0010	ug/l	
375-85-9	Perfluoroheptanoic acid	0.0209	0.0042	0.0021	0.0010	ug/l	
335-67-1	Perfluorooctanoic acid	0.0413	0.0042	0.0021	0.0010	ug/l	
375-95-1	Perfluorononanoic acid	0.00787	0.0042	0.0021	0.0010	ug/l	
335-76-2	Perfluorodecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2058-94-8	Perfluoroundecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
307-55-1	Perfluorododecanoic acid	0.0021 U	0.0042	0.0021	0.0016	ug/l	
72629-94-8	Perfluorotridecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
376-06-7	Perfluorotetradecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	

## PERFLUOROALKYLSULFONATES

375-73-5	Perfluorobutanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l	
68259-12-1	Perfluorononanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	
335-77-3	Perfluorodecanesulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l	

## PERFLUOROOCETANESULFONAMIDES

754-91-6	PFOSA	0.0021 U	0.0042	0.0021	0.0010	ug/l	
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## PERFLUOROOCETANESULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	0.0083 U	0.021	0.0083	0.0042	ug/l	
2991-50-6	EtFOSAA	0.0083 U	0.021	0.0083	0.0042	ug/l	

## FLUOROTELOMER SULFONATES

757124-72-4	4:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	0.0912	0.0083	0.0042	0.0021	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

<b>Client Sample ID:</b>	P18-067-04	<b>Date Sampled:</b>	10/25/18
<b>Lab Sample ID:</b>	FA58985-5	<b>Date Received:</b>	11/01/18
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	EPA 537M QSM5.1 B-15 EPA 537 MOD		
<b>Project:</b>	1189909		

PFAS List

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
39108-34-4	8:2 Fluorotelomer sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	77%		50-150%
	13C5-PFPeA	93%		50-150%
	13C5-PFHxA	109%		50-150%
	13C4-PFHpA	115%		50-150%
	13C8-PFOA	125%		50-150%
	13C9-PFNA	137%		50-150%
	13C6-PFDA	140%		50-150%
	13C7-PFUnDA	107%		50-150%
	13C2-PFDoDA	96%		50-150%
	13C2-PFTeDA	63%		50-150%
	13C3-PFBS	87%		50-150%
	13C3-PFHxS	104%		50-150%
	13C8-PFOS	91%		50-150%
	13C8-FOSA	110%		50-150%
	d3-MeFOSAA	102%		50-150%
	13C2-4:2FTS	107%		50-150%
	13C2-6:2FTS	128%		50-150%
	13C2-8:2FTS	119%		50-150%

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

FA58985

CLIENT:		SGS North America Inc. - Alaska Division				SGS Reference:		SGS, FI		www.us.sgs.com			
CONTACT: Julie Shumway PHONE NO: (907) 562-2343						Additional Comments: All soils report out in dry weight unless otherwise requested.						Page 1 of 1	
PROJECT NAME: 1189909		PWSID#:				C O N T A I N E R S	Preservative Used: NONE	TYPE C = COMP G = GRAB Multi-Incremental Soils	PFAS EPA 637	MS	MSD	SGS lab #	Location ID
REPORTS TO:		E-MAIL: Julie.Shumway@sgs.com											
INVOICE TO:		QUOTE #: 1189909											
RESERVED for lab use		SAMPLE IDENTIFICATION		DATE mm/dd/yy	TIME HHMM	MATRIX							
1	P18-067-01	10/25/2018	17:15	water	2	G	X				1189909001		
2	P18-067-02	10/25/2018	17:15	water	2	G	X				1189909002		
3	Field Blank-1	10/25/2018	17:15	water	1	G	X				1189909003		
4	P18-067-03	10/25/2018	19:20	water	2	G	X				1189909004		
5	P18-067-04	10/25/2018	19:20	water	2	G	X				1189909005		
Relinquished By: (1)		Date	Time	Received By:		DOD Project? YES Report to DL (J Flags)? YES				Data Deliverable Requirements:			
Relinquished By: (2)		Date	Time	Received By:		Cooler ID:				Level 2 Report			
Relinquished By: (3)		Date	Time	Received By:		Requested Turnaround Time and/or Special Instructions:							
Relinquished By: (4)		Date	Time	Received For Laboratory By:		Report all analyses for Soils/Waters in mg/L or mg/Kg, where possible				Chain of Custody Seal: (Circle)			
						Temp Blank °C: 3.2				INTACT BROKEN ABSENT			
						or Ambient [ ]							

[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](http://www.sgs.com/terms_and_conditions.htm)

1189909 PFAS 10.29.18.xls

**FA58985: Chain of Custody**  
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