

Analytical Laboratory Services

Data Rating (A=acceptable,

Q=qualified or R=rejected):

Data Verification Checklist

Project Number:

P18-067 Nordale Yard Drinking Water Wells

Verifier's Signature and Date:

Bolly Grabbe november 19, 2&18

YES	NO	N/A	Sample Collection	
\boxtimes			Did the sample collection comply with the regulatory method?	
	\boxtimes		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
\boxtimes			Is the chain of custody (COC) form complete and accurate?
\boxtimes			Do COC dates and custody seals reflect unbroken custody?
\boxtimes			Are all samples on the COC accounted for?
\boxtimes			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						
\boxtimes			Did the lab complete the correct analytical methods as requested on the COC?						
\boxtimes			ere the method specific holding times met?						
\boxtimes			the method sensitivity (LOQ/RL) adequate for data use?						
\boxtimes			Does the case narrative support the data as meeting quality objectives for the project?						
\boxtimes			re all the quality control sample results present and do they indicate that the data neets quality objectives?						
⊠ Commer	nts and atta	Chments:	Do the results make sense? • PFAS per EPA 537 were analyzed by SGS of Orlando, FL.						
Note:	565- Or	lando	ran EPA 537 MODIFIED, an isotope dilution meter						

YES	NO	N/A	Documentation						
\boxtimes			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 Rating (A=acceptable,

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Project Number:

P18-067 Nordale Yard Drinking Water Wells

Verifier's Signature and Date:

Alyeska pipeline

Rolly Grabbe november 19, 2&18

YES	NO	N/A	Sample Collection					
\boxtimes			Did the sample collection comply with the regulatory method?					
	\boxtimes		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						
			Is the chain of custody (COC) form complete and accurate?						
\boxtimes			Do COC dates and custody seals reflect unbroken custody?						
\boxtimes			Are all samples on the COC accounted for?						
\boxtimes			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					
\boxtimes			Did the lab complete the correct analytical methods as requested on the COC?					
\boxtimes			Nere the method specific holding times met?					
\boxtimes			Is the method sensitivity (LOQ/RL) adequate for data use?					
\boxtimes			Does the case narrative support the data as meeting quality objectives for the project?					
\boxtimes			Are all the quality control sample results present and do they indicate that the data meets quality objectives?					
\boxtimes			Do the results make sense?					
Commen	ts and atta	achments:	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 ½" 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 feet, 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

Alyeska pipeline	REVI	EWE	D.A.	25	1	189	909	न्तर							Chain of Custoc	
CHAIN OF CUST	ODY RE	CORD	CUSTO	Y RECORD / REF	201				0	AN	ALYS	SES		LAB PROJECT #:	ALYESKA PROJECT #	
SGS			Alyeska	Pipeline Service Co	0.		•			REC	DES	TED				
200 West Potter Drive			Attn: Ma	rina Mitchell											P18-067	
Anchorage, Alaska 99518 P.O. Box				`												
(90/) 562-2343 Anchora			96, AK 995 19-0001)												
Attn.: Justin Nelson			Phone:	JI) 101-0110 (007) 787 8627										TROJECT NAME.		
SAMPLER.	Complete	record c	onv and	send original wit	h samples				1							
LABORATORY: On receipt of samples, com record with report. Notify /			les, com Notify A	uplete record. On completion of analysis, return copy of Analytical Services before disposal of samples.					PA 537					Nordale Yard D	ard Drinking Water Wells	
*Sample Type - Grab, **Matrix - water, soil, a	Composite iir, sludge,	, flow-we organic	eighted, o liquid, se	ontinuous monito a-water	oring	4	4	L	per EF					REQUESTED TURNA	ROUND TIME:	
SAMPLE ID	SAMPLED BY	SAMPLE DATE	SAMPLE TIME	SAMPLE LOCATION	SAMPLE TYPE*	CONT- AINERS	PRESERV-	MATRIX**	PFAS					RE	MARKS	
P18-067-01 DA-B	SJL	10/25/18	17:15	Nordale West Well	Grab	2 x 250 mL	<6 deg F	DW	x							
P18-067-02 (2) A-B	SJL	10/25/18	17:15	Nordale West Well	Grab	2 x 250 mL	<6 deg F	DW	x					Field Dup		
Field Blank-	SJL	10/25/18	17:15	Nordale West Well	Grab	1 x 250 mL	<6 deg F	DW	x					PFAS Free water supplied by SGS		
P18-067-03 (4) A-B	SJL	10/25/18	19:20	Nordale East Well	Grab	2 x 250 mL	<6 deg F	ĐW	x							
P18-067-04(5)A-B	SJL	10/25/18	19:20	Nordale East Well	Grab	2 x 250 mL	<6 deg F	DW	x					Field Dup		
// E														Note: All samples	go to SGS-Orlando	
RELINQUISHED BY: (1)	nder	/		date: 10-26-18	TIME: 13:4	+	RECEIVED	BY: Dur	l Wirnes	ld:	KU8	(?	"4	DATE:	TIME:	
RELINQUISHED BY: (2) DATE:			DATE:	TIME:	2	RECEIVED	BY:						DATE:	TIME:		
RELINQUISHED BY: (3)													DATE:	TIME:		
10/30/18				09:15	09:15 milion -						10/30/18	019:15				
AIR BILL # (attach receip	ts):			Custody seal #	Chain of C	Sustody Se	al (circle)	Thermal P	rese	vatio	n Met	?		Temporaturo Blanki		

ANCS CS= 1F, 1B TB= -0.1 D25

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS North America, Inc	Job No	FA58985
Site:	1189909	Report Date	11/16/2018 6:10:48

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

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:

Ariel Hartney, Client Services (signature on file)

Matrix: AQ

Report of Analysis

Page 1 of 2

Client Samj Lab Sample Matrix: Method: Project:	ple ID: P18-067-01 PID: FA58985-1 AQ - Water EPA 537M QSM5.1 E 1189909	3-15 EPA 53	7 MOD		Date Date Perce	Sampled: Received ent Solids	10 11 n/s	10/25/18 11/01/18 n/a		
Run #1 Run #2	File ID DF A 2Q23879.D 1 1	nalyzed 1/15/18 22:55	By NG	Prep D 11/14/1	ate 8 08:00	Prep Bar OP72621	tch	Analytical Batch S2Q369		
Run #1 Run #2	Initial VolumeFinal Volume250 ml1.0 ml	e								
PFAS List										
CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q			
PERFLUO	ROALKYLCARBOXYLIC A	CIDS								
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				
PERFLUO	ROALKYLSULFONATES									
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				
PERFLUO	ROOCTANESULFONAMIDE	S								
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l				
PERFLUO	ROOCTANESULFONAMIDO	DACETIC AC	CIDS							
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				
FLUOROT	ELOMER 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 E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



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Report of Analysis

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Client Sample ID:	P18-067-01		
Lab Sample ID:	FA58985-1	Date Sampled:	10/25/18
Matrix:	AQ - Water	Date Received:	11/01/18
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	Percent Solids:	n/a
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	Limi	ts				
	13C4-PFBA	75%		50-1	50%				
	13C5-PFPeA	92%		50-1	50%				
	13C5-PFHxA	105%		50-1	50%				
	13C4-PFHpA	110% 50-150%							
	13C8-PFOA	118% 50-150%							
	13C9-PFNA	128%	28% 50-150%						
	13C6-PFDA	138%		50-1	50%				
	13C7-PFUnDA	106%		50-1	50%				
	13C2-PFDoDA	96%		50-1:	50%				
	13C2-PFTeDA	50%		50-1	50%				
	13C3-PFBS	87%		50-1:	50%				
	13C3-PFHxS	100%		50-1	50%				
	13C8-PFOS	94%		50-1	50%				
	13C8-FOSA			50-1	50%				
	d3-MeFOSAA		102%			50-150%			
	13C2-4:2FTS	104%	50-150%						
	13C2-6:2FTS		115%			50-150%			
	13C2-8:2FTS	113%		50-1	50%				

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Report of Analysis

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Client Sample ID: P18-067-02 Lab Sample ID: FA58985-2 Matrix: AQ - Water Method: EPA 537M QSM5.1 Project: 1189909			3-15 EPA 53'	Date Sampled: 10/25/18 Date Received: 11/01/18 Percent Solids: n/a					
Run #1 Run #2	File ID D 2Q23880.D 1	F А 1	Analyzed 1/15/18 23:11	By NG	Prep D 11/14/1	ate 8 08:00	Prep Ba OP7262	tch 1	Analytical Batch S2Q369
Run #1 Run #2	Initial VolumeF250 ml1.	inal Volum .0 ml	ne						
PFAS List									
CAS No.	Compound		Result	LOQ	LOD	DL	Units	Q	
PERFLUO	ROALKYLCARBO	XYLIC A	CIDS						
375-22-4	Perfluorobutanoic	acid	0.00395	0.0080	0.0040	0.0020	ug/l	J	
2706-90-3	Perfluoropentanoio	e 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	c 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	Perfluoroundecano	ic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l		
307-55-1	Perfluorododecano	ic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l		
72629-94-8	Perfluorotridecano	ic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l		
376-06-7	Perfluorotetradeca	noic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l		
PERFLUO	ROALKYLSULFO	NATES							
375-73-5	Perfluorobutanesul	fonic acid	0.00390	0.0040	0.0020	0.0010	ug/l	J	
2706-91-4	Perfluoropentanesu	ulfonic acid	0.00658	0.0040	0.0020	0.0010	ug/l		
355-46-4	Perfluorohexanesu	lfonic acid	0.0429	0.0040	0.0020	0.0010	ug/l		
375-92-8	Perfluoroheptanesu	ulfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l		
1763-23-1	Perfluorooctanesul	fonic acid	0.0040 U	0.0080	0.0040	0.0020	ug/l		
68259-12-1	Perfluorononanesu	lfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l		
335-77-3	Perfluorodecanesu	lfonic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l		
PERFLUO	ROOCTANESULF	ONAMIDI	ES						
754-91-6	PFOSA		0.0020 U	0.0040	0.0020	0.0010	ug/l		
PERFLUO	ROOCTANESULF	ONAMIDO	DACETIC AC	CIDS					
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		
FLUOROT	ELOMER SULFOR	NATES							
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		

U = Not detected LOD = Limit of Detection

LOQ = Limit of Quantitation DL = Detection LimitE = Indicates value exceeds calibration range $J=\ Indicates\ an\ estimated\ value$

B = Indicates analyte found in associated method blank

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$





Report of Analysis

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Client Sample ID:	P18-067-02		
Lab Sample ID:	FA58985-2	Date Sampled:	10/25/18
Matrix:	AQ - Water	Date Received:	11/01/18
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	Percent Solids:	n/a
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	ts					
	13C4-PFBA	73%		50-1	50%				
	13C5-PFPeA	89%		50-1	50%				
	13C5-PFHxA	100%		50-1	50%				
	13C4-PFHpA	105% 50-150%							
	13C8-PFOA	114% 50-150%							
	13C9-PFNA	123% 50-150%							
	13C6-PFDA	126%		50-1	50%				
	13C7-PFUnDA	98%		50-1	50%				
	13C2-PFDoDA	94%		50-1:	50%				
	13C2-PFTeDA	57%		50-1	50%				
	13C3-PFBS	84%		50-1	50%				
	13C3-PFHxS	93%		50-1:	50%				
	13C8-PFOS	86%		50-1:	50%				
	13C8-FOSA	95%		50-1	50%				
	d3-MeFOSAA		95%			50-150%			
	13C2-4:2FTS		99%						
	13C2-6:2FTS	110%		50-1:	50%				
	13C2-8:2FTS	105% 50-150%							

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$

SGS

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Report of Analysis

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Client Sample ID:FIELD BLANK-1Lab Sample ID:FA58985-3Matrix:AQ - Field Blank WaMethod:EPA 537M QSM5.1Project:1189909		er -15 EPA 53'	7 MOD	Date Sampled: Date Received: Percent Solids:			10 11 n/	10/25/18 11/01/18 n/a	
Run #1 Run #2	File ID DF A 2Q23881.D 1 1	nalyzed 1/15/18 23:27	By 7 NG	Prep Da 11/14/13	ate 8 08:00	Prep Bat OP72621	tch	Analytical Batch S2Q369	
Run #1 Run #2	Initial VolumeFinal Volume250 ml1.0 ml	e							
PFAS List									
CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q		
PERFLUO	ROALKYLCARBOXYLIC AG	CIDS							
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			
PERFLUO	ROALKYLSULFONATES								
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			
PERFLUO	ROOCTANESULFONAMIDE	S							
754-91-6	PFOSA	0.0020 U	0.0040	0.0020	0.0010	ug/l			
PERFLUO	ROOCTANESULFONAMIDO	ACETIC AC	CIDS						
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			
FLUOROT	ELOMER 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

LOQ = Limit of Quantitation DL = Detection LimitE = Indicates value exceeds calibration range $J=\ Indicates\ an\ estimated\ value$

B = Indicates analyte found in associated method blank

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$



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Report of Analysis

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

PFAS List

C	CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q		
3	9108-34-4	8:2 Fluorotelomer sulfonate	0.0040 U	0.0080	0.0040	0.0020	ug/l			
C	CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limi	ts				
		13C4-PFBA	100%		50-1:	50%				
		13C5-PFPeA	99%		50-1:	50%				
		13C5-PFHxA	100%		50-1	50%				
		13C4-PFHpA	103% 50-150%							
		13C8-PFOA	114% 50-150%							
		13C9-PFNA	126%		50-1	50%				
		13C6-PFDA	120%		50-1	50%				
		13C7-PFUnDA	112%	50-150%						
		13C2-PFDoDA	113%		50-1	50%				
		13C2-PFTeDA	77%		50-1	50%				
		13C3-PFBS	102%		50-1	50%				
		13C3-PFHxS	99%		50-1	50%				
		13C8-PFOS	95%		50-1	50%				
		13C8-FOSA	118%		50-1	50%				
		d3-MeFOSAA		100%			50-150%			
		13C2-4:2FTS		95%			50-150%			
	13C2-6:2FTS		107%	50-150%						
	13C2-8:2FTS		105%		50-1	50%				

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$

 $J=\ Indicates\ an\ estimated\ value$

B = Indicates analyte found in associated method blank

Report of Analysis

Page 1 of 2

Client Sam Lab Sample Matrix: Method: Project:	ple ID: P18-067 e ID: FA5898: AQ - Wa EPA 537 1189909	e ID: P18-067-03 ID: FA58985-4 AQ - Water EPA 537M QSM5.1 B-15 EPA 537 MOD 1189909				Date Date Perce	: 10 : 11 : n/	10/25/18 11/01/18 n/a	
Run #1 Run #2	File ID 2Q23882.D	DF 1	Analyzed 11/15/18 23:43	By NG	Prep D 11/14/1	ate 8 08:00	Prep Ba OP7262	tch 1	Analytical Batch S2Q369
Run #1 Run #2	Initial Volume 240 ml	Final Volu 1.0 ml	me						
PFAS List									
CAS No.	Compound		Result	LOQ	LOD	DL	Units	Q	
PERFLUO	ROALKYLCAR	BOXYLIC A	ACIDS						
375-22-4	Perfluorobutano	ic acid	0.0128	0.0083	0.0042	0.0021	ug/l		
2706-90-3	Perfluoropentan	oic acid	0.0521	0.0042	0.0021	0.0016	ug/l		
307-24-4	Perfluorohexand	oic acid	0.0250	0.0042	0.0021	0.0010	ug/l		
375-85-9	Perfluoroheptan	oic acid	0.0204	0.0042	0.0021	0.0010	ug/l		
335-67-1	Perfluorooctano	ic acid	0.0403	0.0042	0.0021	0.0010	ug/l		
375-95-1	Perfluorononano	oic acid	0.00868	0.0042	0.0021	0.0010	ug/l		
335-76-2	Perfluorodecano	oic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
2058-94-8	Perfluoroundeca	anoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
307-55-1	Perfluorododeca	anoic acid	0.0021 U	0.0042	0.0021	0.0016	ug/l		
72629-94-8	Perfluorotrideca	noic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
376-06-7	Perfluorotetrade	ecanoic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
PERFLUO	ROALKYLSULF	FONATES							
375-73-5	Perfluorobutane	sulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
2706-91-4	Perfluoropentan	esulfonic aci	d 0.0021 U	0.0042	0.0021	0.0010	ug/l		
355-46-4	Perfluorohexane	esulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
375-92-8	Perfluoroheptan	esulfonic aci	d 0.0021 U	0.0042	0.0021	0.0010	ug/l		
1763-23-1	Perfluorooctane	sulfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l		
68259-12-1	Perfluorononane	esulfonic acid	1 0.0021 U	0.0042	0.0021	0.0010	ug/l		
335-77-3	Perfluorodecane	esulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
PERFLUO	ROOCTANESUI	LFONAMID	ES						
754-91-6	PFOSA		0.0021 U	0.0042	0.0021	0.0010	ug/l		
PERFLUO	ROOCTANESUI	LFONAMID	OACETIC AC	CIDS					
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		
FLUOROT	ELOMER SULF	ONATES							
757124-72-4	4 4:2 Fluorotelom	er sulfonate	0.0042 U	0.0083	0.0042	0.0021	ug/l		
27619-97-2	6:2 Fluorotelom	er sulfonate	0.0908	0.0083	0.0042	0.0021	ug/l		



LOQ = Limit of Quantitation DL = Detection Limit EE = Indicates value exceeds calibration range N

 $J=\ Indicates\ an\ estimated\ value$

B = Indicates analyte found in associated method blank

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$

4.4 4

Report of Analysis

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Client Sample ID:	P18-067-03		
Lab Sample ID:	FA58985-4	Date Sampled:	10/25/18
Matrix:	AQ - Water	Date Received:	11/01/18
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	Percent Solids:	n/a
Project:	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	Limi					
	13C4-PFBA	78%		50-1	50%				
	13C5-PFPeA	95%		50-1	50%				
	13C5-PFHxA	111%		50-1	50%				
	13C4-PFHpA	117% 50-150%							
	13C8-PFOA	125%	125% 50-150%						
	13C9-PFNA	134%	34% 50-150%						
	13C6-PFDA	142%		50-1	50%				
	13C7-PFUnDA	114%		50-1	50%				
	13C2-PFDoDA	112%		50-1:	50%				
	13C2-PFTeDA	73%		50-1	50%				
	13C3-PFBS	89%		50-1	50%				
	13C3-PFHxS	106%		50-1:	50%				
	13C8-PFOS	103%		50-1:	50%				
	13C8-FOSA			50-1:	50%				
	d3-MeFOSAA		108%			50-150%			
	13C2-4:2FTS	109%	50-150%						
	13C2-6:2FTS		129%			50-150%			
	13C2-8:2FTS			50-1	50%				

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$



4.4

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$

Report of Analysis

Page 1 of 2

Client Samj Lab Sample Matrix: Method: Project:	ple ID: P18-067-04 PL: FA58985-5 AQ - Wate EPA 537M 1189909	4 5 r I QSM5.1 I	B-15 EPA 53	Date Sampled: 10/25/18 Date Received: 11/01/18 Percent Solids: n/a					
Run #1 Run #2	File ID D 2Q23883.D 1	DF 2	Analyzed 11/15/18 23:58	By NG	Prep D 11/14/1	ate 8 08:00	Prep Ba OP7262	1 1	Analytical Batch S2Q369
Run #1 Run #2	Initial VolumeF240 ml1	'inal Volun .0 ml	ne						
PFAS List									
CAS No.	Compound		Result	LOQ	LOD	DL	Units	Q	
PERFLUO	ROALKYLCARBO	OXYLIC A	CIDS						
375-22-4	Perfluorobutanoic	acid	0.0131	0.0083	0.0042	0.0021	ug/l		
2706-90-3	Perfluoropentanoio	c 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	Perfluoroheptanoio	c 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	Perfluoroundecano	oic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
307-55-1	Perfluorododecano	oic acid	0.0021 U	0.0042	0.0021	0.0016	ug/l		
72629-94-8	Perfluorotridecand	oic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
376-06-7	Perfluorotetradeca	noic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
PERFLUO	ROALKYLSULFO	NATES							
375-73-5	Perfluorobutanesu	lfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
2706-91-4	Perfluoropentanes	ulfonic acid	1 0.0021 U	0.0042	0.0021	0.0010	ug/l		
355-46-4	Perfluorohexanesu	lfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
375-92-8	Perfluoroheptanes	ulfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
1763-23-1	Perfluorooctanesu	lfonic acid	0.0042 U	0.0083	0.0042	0.0021	ug/l		
68259-12-1	Perfluorononanesu	Ifonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
335-77-3	Perfluorodecanesu	lfonic acid	0.0021 U	0.0042	0.0021	0.0010	ug/l		
PERFLUO	ROOCTANESULF	ONAMID	ES						
754-91-6	PFOSA		0.0021 U	0.0042	0.0021	0.0010	ug/l		
PERFLUO	ROOCTANESULF	ONAMID	DACETIC AC	CIDS					
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		
FLUOROT	ELOMER SULFO	NATES							
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 LimitE = Indicates value exceeds calibration range B = Indicates analyte found in associated method blank

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$



4.5

Report of Analysis

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Client Sample ID:	P18-067-04		
Lab Sample ID:	FA58985-5	Date Sampled:	10/25/18
Matrix:	AQ - Water	Date Received:	11/01/18
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	Percent Solids:	n/a
Project:	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	Limi	its					
	13C4-PFBA	77%		50-1	50%					
	13C5-PFPeA	93%		50-1	50-150%					
	13C5-PFHxA	109%		50-1	50%					
	13C4-PFHpA	115%		50-1	50%					
	13C8-PFOA	125%		50-1	50%					
	13C9-PFNA	50-1	0-150%							
	13C6-PFDA	140%		50-1	50-150%					
	13C7-PFUnDA	107%		50-1	50-150%					
	13C2-PFDoDA	96%		50-1	50%					
	13C2-PFTeDA	63%		50-1	50%					
	13C3-PFBS	87%		50-1	50-150%					
	13C3-PFHxS	104%		50-1	50-150% 50-150% 50-150%					
	13C8-PFOS	91%		50-1						
	13C8-FOSA	110%		50-1						
	d3-MeFOSAA	102%		50-1	50%					
	13C2-4:2FTS	107%		50-1	50%					
	13C2-6:2FTS	128%		50-1	50%					
	13C2-8:2FTS	119%		50-1	50%					

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



SGS North America Inc. CHAIN OF CUSTODY RECORD



Locations Nationwide

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FA58985

CLIENT: SGS North America Inc Alaska Division					SGS Reference: SGS, FI										
CONTACT:	NTACT: Julie Shumway PHONE NO: (907) 562-2343			Additional Comments: All soils report out in dry weight unless otherwise Page 1 of 1 requested.											
PROJECT 1189909 NAME: 1189909		PWSID#: NPDL#:				Preserv- ative	*								
					0	Used:	401-								
REPORTS TO:		E-MAIL:	L: Julie.Shumway@sgs.com		T	C =									
INVOICE TO:		QUOTE #:			1 -	G = GRAB	631								
SGS - Alaska		P.O. #:	#: 1189909			Multi Incre-	EPA					1			
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME	MATRIX/ MATRIX	R S	Solls	PFAS				MS	MSD	SGS lab #	Location ID	
	P18-067-01	10/25/2018	17:15	water	2	G	Х						1189909001		
2	P18-067-02	10/25/2018	17:15	water	2	G	Х						1189909002		
3	Field Blank-1	10/25/2018	17:15	water	1	G	х						1189909003		
Ч	P18-067-03	10/25/2018	19:20	water	2	G	х						1189909004		
5	P18-067-04	10/25/2018	19:20	water	2	G	х						1189909005		
1. S. S. S.												-			
									+			·····			
						-									
Relinguished/By: (1)		Date	Time	Received B	ly:			DOD Project? YES					Data Deliverable Requirem	ents:	
Depursural		10/3/18	1005	1	MPS				Report to DL (J Flags)? YES Cooler ID:					Level 2 Report	
Relinguished	HBY: (2) NPS	Date	Time	Received B	y:				Reque	ested Tu	irnarou	und Tim	e and-or Special	nstructions:	
Relinquished By: (3)		Date	Time	Received B	eived By: /				Report all analyses for Soils/Waters in mg/L or mg/Kg, where possible						ossible
				11					Temp Blank °C: <u>3.</u> 2					Chain of Custody Seal: ((Circle)
Relinquished By: (4)		Date	Time	Received F	II/01/18				or Ambient []					INTACT BROKEN A	BSENT
[X1200 W. F	otter Drive Anchorage, AK 995	18 Tel: (907) 562	2343 Fax: (90)	561-5301		- 1	1		http://	www.so	s.com	/terms	and conditions.h	tm	

[] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

1189909_PFAS_10.29.18.xls

FA58985: Chain of Custody Page 1 of 2



