GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
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gel.com

February 16, 2018

Bob Walker
H2GO Brunswick Regional Water & Sewer
PO BOX 2230
Leland, North Carolina 28451

Re: Sample Analysis
Work Order: 442976

Dear Bob Walker:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 02, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Hope Taylor
Project Manager

Purchase Order: signed quote
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

H2GO001 H2GO Brunswick Regional Water & Sewer

Client SDG: 442976 GEL Work Order: 442976

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

J Value is estimated

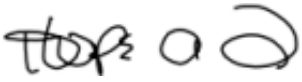
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by 

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Certificate of Analysis

Report Date: February 16, 2018

Company : H2GO Brunswick Regional Water & Sewer
Address : PO BOX 2230

Leland, North Carolina 28451
Contact: Bob Walker
Project: Sample Analysis

Client Sample ID: Ground Storage Tank/BPS
Sample ID: 442976001
Matrix: Water
Collect Date: 01-FEB-18 14:48
Receive Date: 02-FEB-18
Collector: Client

Project: H2GO00117
Client ID: H2GO001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
LCMSMS PFCs												
NC 6 PFCs by LC-MS/MS "As Received"												
Nafion Byproduct 1	X	1.44			ng/L	0.0184	1	JLS	02/12/18	1226	1737096	1
Nafion Byproduct 2	X	2.62			ng/L	0.0184	1					
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)	X	0.952			ng/L	0.0184	1					
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	X	2.76			ng/L	0.0184	1					
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	X	9.22			ng/L	0.0184	1					
Perfluoro-2-methoxyacetic acid (PFMOAA)	X	0.280			ng/L	0.0184	1					
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	X	5.82			ng/L	0.0184	1					
Perfluoro-4-methoxybutanic acid (PFMOBA)	X	0.717			ng/L	0.0184	1					
PFOA, PFOS by LC-MS/MS "As Received"												
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)		34.5	0.606	1.84	ng/L	0.0184	1	JLS	02/12/18	1226	1737096	2
Fluorotelomer sulfonate 6:2 (6:2 FTS)	J	1.63	1.21	3.49	ng/L	0.0184	1					
Fluorotelomer sulfonate 8:2 (8:2 FTS)	U	ND	1.21	3.53	ng/L	0.0184	1					
Perfluorobutanesulfonate (PFBS)		4.52	0.606	1.63	ng/L	0.0184	1					
Perfluorobutyric acid (PFBA)		14.7	0.606	1.84	ng/L	0.0184	1					
Perfluorodecanesulfonate (PFDS)	U	ND	0.606	1.78	ng/L	0.0184	1					
Perfluorodecanoic acid (PFDA)		1.85	0.606	1.84	ng/L	0.0184	1					
Perfluorododecanoic acid (PFDoA)	U	ND	0.606	1.84	ng/L	0.0184	1					
Perfluoroheptanesulfonate (PFHpS)	U	ND	0.606	1.74	ng/L	0.0184	1					
Perfluoroheptanoic acid (PFHpA)		31.2	0.606	1.84	ng/L	0.0184	1					
Perfluorohexanesulfonate (PFHxS)		6.67	0.606	1.67	ng/L	0.0184	1					
Perfluorohexanoic acid (PFHxA)		48.4	0.606	1.84	ng/L	0.0184	1					
Perfluorononanesulfonate (PFNS)	U	ND	0.606	1.76	ng/L	0.0184	1					
Perfluorononanoic acid (PFNA)		2.56	0.606	1.84	ng/L	0.0184	1					
Perfluorooctanesulfonamide (PFOSA)	U	ND	0.606	1.71	ng/L	0.0184	1					
Perfluorooctanesulfonate (PFOS)		11.9	0.606	1.84	ng/L	0.0184	1					
Perfluorooctanoic acid (PFOA)		14.3	0.606	1.84	ng/L	0.0184	1					
Perfluoropentanesulfonate (PFPeS)	J	1.15	0.606	1.73	ng/L	0.0184	1					
Perfluoropentanoic acid (PFPeA)		40.4	0.606	1.84	ng/L	0.0184	1					

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Certificate of Analysis

Report Date: February 16, 2018

Company : H2GO Brunswick Regional Water & Sewer
Address : PO BOX 2230

Leland, North Carolina 28451
Contact: Bob Walker
Project: Sample Analysis

Client Sample ID: Ground Storage Tank/BPS
Sample ID: 442976001
Project: H2GO00117
Client ID: H2GO001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
LCMSMS PFCs												
PFOA, PFOS by LC-MS/MS "As Received"												
Perfluorotetradecanoic acid (PFTeDA)	U	ND	0.606	1.84	ng/L	0.0184	1					
Perfluorotridecanoic acid (PFTrDA)	U	ND	0.606	1.84	ng/L	0.0184	1					
Perfluoroundecanoic acid (PFUdA)	U	ND	0.606	1.84	ng/L	0.0184	1					
Fluorotelomer sulfonate 4:2 (4:2 FTS)	U	ND	6.06	17.3	ng/L	0.0184	5	JLS	02/12/18	1208	1737096	3
Semi-Volatile-GC/MS												
EPA 522 1,4-Dioxane in Liquid "As Received"												
1,4-Dioxane		7.28	0.100	0.200	ug/L	0.020	1	JMB3	02/15/18	1507	1739123	4

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 522	EPA 522 Prep 1,4-Dioxane	SJ	02/15/18	1030	1739122
EPA 537	PFCs Extraction in Drinking Water	MXD2	02/06/18	1110	1737094

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 537	
2	EPA 537	
3	EPA 537	
4	EPA 522	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,4-Dioxane-d8	EPA 522 1,4-Dioxane in Liquid "As Received"	4.30 ug/L	4.00	108	(70%-130%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: February 16, 2018

Company : H2GO Brunswick Regional Water & Sewer
Address : PO BOX 2230

Leland, North Carolina 28451
Contact: Bob Walker
Project: Sample Analysis

Client Sample ID: TRIP BLANK
Sample ID: 442976002
Matrix: Water
Collect Date: 01-FEB-18 14:48
Receive Date: 02-FEB-18
Collector: Client

Project: H2GO00117
Client ID: H2GO001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
LCMSMS PFCs												
NC 6 PFCs by LC-MS/MS "As Received"												
Nafion Byproduct 1	UX	ND			ng/L	0.0198	1	JLS	02/10/18	1849	1737096	1
Nafion Byproduct 2	UX	ND			ng/L	0.0198	1					
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)	UX	ND			ng/L	0.0198	1					
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	UX	ND			ng/L	0.0198	1					
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	UX	ND			ng/L	0.0198	1					
Perfluoro-2-methoxyacetic acid (PFMOAA)	UX	ND			ng/L	0.0198	1					
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	UX	ND			ng/L	0.0198	1					
Perfluoro-4-methoxybutanic acid (PFMOBA)	UX	ND			ng/L	0.0198	1					
PFOA, PFOS by LC-MS/MS "As Received"												
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	U	ND	0.654	1.98	ng/L	0.0198	1	JLS	02/10/18	1849	1737096	2
Fluorotelomer sulfonate 4:2 (4:2 FTS)	U	ND	1.31	3.73	ng/L	0.0198	1					
Fluorotelomer sulfonate 6:2 (6:2 FTS)	U	ND	1.31	3.77	ng/L	0.0198	1					
Fluorotelomer sulfonate 8:2 (8:2 FTS)	U	ND	1.31	3.80	ng/L	0.0198	1					
Perfluorobutanesulfonate (PFBS)	U	ND	0.654	1.76	ng/L	0.0198	1					
Perfluorobutyric acid (PFBA)	U	ND	0.654	1.98	ng/L	0.0198	1					
Perfluorodecanesulfonate (PFDS)	U	ND	0.654	1.92	ng/L	0.0198	1					
Perfluorodecanoic acid (PFDA)	U	ND	0.654	1.98	ng/L	0.0198	1					
Perfluorododecanoic acid (PFDoA)	U	ND	0.654	1.98	ng/L	0.0198	1					
Perfluoroheptanesulfonate (PFHpS)	U	ND	0.654	1.88	ng/L	0.0198	1					
Perfluoroheptanoic acid (PFHpA)	U	ND	0.654	1.98	ng/L	0.0198	1					
Perfluorohexanesulfonate (PFHxS)	U	ND	0.654	1.80	ng/L	0.0198	1					
Perfluorohexanoic acid (PFHxA)	U	ND	0.654	1.98	ng/L	0.0198	1					
Perfluorononanesulfonate (PFNS)	U	ND	0.654	1.90	ng/L	0.0198	1					
Perfluorononanoic acid (PFNA)	U	ND	0.654	1.98	ng/L	0.0198	1					
Perfluorooctanesulfonamide (PFOSA)	U	ND	0.654	1.84	ng/L	0.0198	1					
Perfluorooctanesulfonate (PFOS)	U	ND	0.654	1.98	ng/L	0.0198	1					
Perfluorooctanoic acid (PFOA)	U	ND	0.654	1.98	ng/L	0.0198	1					

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Certificate of Analysis

Report Date: February 16, 2018

Company : H2GO Brunswick Regional Water & Sewer
Address : PO BOX 2230

Leland, North Carolina 28451
Contact: Bob Walker
Project: Sample Analysis

Client Sample ID: TRIP BLANK
Sample ID: 442976002
Project: H2GO00117
Client ID: H2GO001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst Date	Time	Batch	Method
LCMSMS PFCs											
PFOA, PFOS by LC-MS/MS "As Received"											
Perfluoropentanesulfonate (PFPeS)	U	ND	0.654	1.86	ng/L	0.0198	1				
Perfluoropentanoic acid (PFPeA)	U	ND	0.654	1.98	ng/L	0.0198	1				
Perfluorotetradecanoic acid (PFTeDA)	U	ND	0.654	1.98	ng/L	0.0198	1				
Perfluorotridecanoic acid (PFTrDA)	U	ND	0.654	1.98	ng/L	0.0198	1				
Perfluoroundecanoic acid (PFUdA)	U	ND	0.654	1.98	ng/L	0.0198	1				

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 537	PFCs Extraction in Drinking Water	MXD2	02/06/18	1110	1737094

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 537	
2	EPA 537	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

QC Summary

Report Date: February 16, 2018

H2GO Brunswick Regional Water & Sewer
PO BOX 2230
Leland, North Carolina

Contact: **Bob Walker**

Workorder: **442976**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds											
Batch 1737096											
QC1203966058 LCS											
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	19.7			22.0	ng/L		111	(70%-130%)	JLS	02/10/18	13:37
Fluorotelomer sulfonate 4:2 (4:2 FTS)	18.4			22.3	ng/L		121	(70%-130%)			
Fluorotelomer sulfonate 6:2 (6:2 FTS)	18.7			24.1	ng/L		129	(70%-130%)			
Fluorotelomer sulfonate 8:2 (8:2 FTS)	18.9			19.1	ng/L		101	(70%-130%)			
Nafion Byproduct 1				0.00	ng/L						
Nafion Byproduct 2				0.00	ng/L						
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)				0.00	ng/L						
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)				0.00	ng/L						
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)				0.00	ng/L						
Perfluoro-2-methoxyacetic acid (PFMOAA)				0.00	ng/L						
Perfluoro-3-methoxypropanoic acid (PFMOPrA)				0.00	ng/L						
Perfluoro-4-methoxybutanic acid (PFMOBA)				0.00	ng/L						
Perfluorobutanesulfonate (PFBS)	17.5			17.9	ng/L		102	(70%-130%)			

QC Summary

Workorder: **442976**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds											
Batch 1737096											
Perfluorobutyric acid (PFBA)	19.7			21.2	ng/L		108	(70%-130%)	JLS	02/10/18	13:37
Perfluorodecanesulfonate (PFDS)	19.0			18.1	ng/L		95	(70%-130%)			
Perfluorodecanoic acid (PFDA)	19.7			19.9	ng/L		101	(70%-130%)			
Perfluorododecanoic acid (PFDoA)	19.7			19.6	ng/L		99	(70%-130%)			
Perfluoroheptanesulfonate (PFHpS)	18.7			19.7	ng/L		105	(70%-130%)			
Perfluoroheptanoic acid (PFHpA)	19.7			21.4	ng/L		109	(70%-130%)			
Perfluorohexanesulfonate (PFHxS)	18.0			21.6	ng/L		120	(70%-130%)			
Perfluorohexanoic acid (PFHxA)	19.7			22.0	ng/L		111	(70%-130%)			
Perfluorononanesulfonate (PFNS)	18.9			19.1	ng/L		101	(70%-130%)			
Perfluorononanoic acid (PFNA)	19.7			18.9	ng/L		96	(70%-130%)			
Perfluorooctanesulfonamide (PFOSA)	18.3			17.7	ng/L		97	(70%-130%)			
Perfluorooctanesulfonate (PFOS)	19.7			18.7	ng/L		95	(70%-130%)			
Perfluorooctanoic acid (PFOA)	19.7			19.5	ng/L		99	(70%-130%)			
Perfluoropentanesulfonate (PFPeS)	18.5			21.1	ng/L		114	(70%-130%)			
Perfluoropentanoic acid (PFPeA)	19.7			20.4	ng/L		104	(70%-130%)			

QC Summary

Workorder: **442976**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds											
Batch 1737096											
Perfluorotetradecanoic acid (PFTeDA)	19.7			20.9	ng/L		106	(70%-130%)	JLS	02/10/18	13:37
Perfluorotridecanoic acid (PFTrDA)	19.7			21.7	ng/L		110	(70%-130%)			
Perfluoroundecanoic acid (PFUdA)	19.7			21.7	ng/L		110	(70%-130%)			
QC1203966057 MB											
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)			U	ND	ng/L					02/10/18	13:19
Fluorotelomer sulfonate 4:2 (4:2 FTS)			U	ND	ng/L						
Fluorotelomer sulfonate 6:2 (6:2 FTS)			U	ND	ng/L						
Fluorotelomer sulfonate 8:2 (8:2 FTS)			U	ND	ng/L						
Nafion Byproduct 1				0.00	ng/L						
Nafion Byproduct 2				0.00	ng/L						
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)				0.00	ng/L						
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)				0.00	ng/L						
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)				0.00	ng/L						
Perfluoro-2-methoxyacetic acid (PFMOAA)				0.00	ng/L						
Perfluoro-3-methoxypropanoic acid (PFMOPrA)				0.00	ng/L						
Perfluoro-4-methoxybutanic acid (PFMOBA)				0.00	ng/L						

QC Summary

Workorder: **442976**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds											
Batch 1737096											
Perfluorobutanesulfonate (PFBS)			U	ND	ng/L				JLS	02/10/18	13:19
Perfluorobutyric acid (PFBA)			U	ND	ng/L						
Perfluorodecanesulfonate (PFDS)			U	ND	ng/L						
Perfluorodecanoic acid (PFDA)			U	ND	ng/L						
Perfluorododecanoic acid (PFDoA)			U	ND	ng/L						
Perfluoroheptanesulfonate (PFHpS)			U	ND	ng/L						
Perfluoroheptanoic acid (PFHpA)			U	ND	ng/L						
Perfluorohexanesulfonate (PFHxS)			U	ND	ng/L						
Perfluorohexanoic acid (PFHxA)			U	ND	ng/L						
Perfluorononanesulfonate (PFNS)			U	ND	ng/L						
Perfluorononanoic acid (PFNA)			U	ND	ng/L						
Perfluorooctanesulfonamide (PFOSA)			U	ND	ng/L						
Perfluorooctanesulfonate (PFOS)			U	ND	ng/L						
Perfluorooctanoic acid (PFOA)			U	ND	ng/L						
Perfluoropentanesulfonate (PFPeS)			U	ND	ng/L						

QC Summary

Workorder: **442976**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Perfluorinated Compounds											
Batch 1737096											
Perfluoropentanoic acid (PFPeA)				U	ND	ng/L				JLS	02/10/18 13:19
Perfluorotetradecanoic acid (PFTeDA)				U	ND	ng/L					
Perfluorotridecanoic acid (PFTrDA)				U	ND	ng/L					
Perfluoroundecanoic acid (PFUdA)				U	ND	ng/L					
QC1203966059 442847003 MS											
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	18.3	U	ND		19.1	ng/L		104	(70%-130%)		02/10/18 14:46
Fluorotelomer sulfonate 4:2 (4:2 FTS)	17.1	U	ND		22.3	ng/L		130	(70%-130%)		
Fluorotelomer sulfonate 6:2 (6:2 FTS)	17.4	U	ND		16.7	ng/L		96	(70%-130%)		
Fluorotelomer sulfonate 8:2 (8:2 FTS)	17.6	U	ND		13.0	ng/L		74	(70%-130%)		
Nafion Byproduct 1			0.00		0.00	ng/L					
Nafion Byproduct 2			0.00		0.00	ng/L					
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)			0.00		0.00	ng/L					
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)			0.00		0.00	ng/L					
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)			0.00		0.00	ng/L					
Perfluoro-2-methoxyacetic acid (PFMOAA)			0.00		0.00	ng/L					
Perfluoro-3-methoxypropanoic acid (PFMOPrA)			0.00		0.00	ng/L					

QC Summary

Workorder: **442976**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds												
Batch 1737096												
Perfluoro-4-methoxybutanic acid (PFMOBA)			0.00		0.00	ng/L				JLS	02/10/18	14:46
Perfluorobutanesulfonate (PFBS)	16.2	U	ND		18.1	ng/L		112	(70%-130%)			
Perfluorobutyric acid (PFBA)	18.3	U	ND		20.3	ng/L		111	(70%-130%)			
Perfluorodecanesulfonate (PFDS)	17.7	U	ND		15.6	ng/L		88	(70%-130%)			
Perfluorodecanoic acid (PFDA)	18.3	U	ND		16.1	ng/L		88	(70%-130%)			
Perfluorododecanoic acid (PFDoA)	18.3	U	ND		16.5	ng/L		90	(70%-130%)			
Perfluoroheptanesulfonate (PFHpS)	17.4	U	ND		18.9	ng/L		109	(70%-130%)			
Perfluoroheptanoic acid (PFHpA)	18.3	U	ND		20.3	ng/L		111	(70%-130%)			
Perfluorohexanesulfonate (PFHxS)	16.7	U	ND		18.3	ng/L		110	(70%-130%)			
Perfluorohexanoic acid (PFHxA)	18.3	U	ND		19.0	ng/L		104	(70%-130%)			
Perfluorononanesulfonate (PFNS)	17.6	U	ND		15.2	ng/L		86	(70%-130%)			
Perfluorononanoic acid (PFNA)	18.3	U	ND		17.4	ng/L		95	(70%-130%)			
Perfluorooctanesulfonamide (PFOSA)	17.0	U	ND		15.9	ng/L		93	(70%-130%)			
Perfluorooctanesulfonate (PFOS)	18.3	U	ND		17.2	ng/L		94	(70%-130%)			
Perfluorooctanoic acid (PFOA)	18.3	U	ND		21.0	ng/L		115	(70%-130%)			

QC Summary

Workorder: **442976**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds												
Batch 1737096												
Perfluoropentanesulfonate (PFPeS)	17.2	U	ND		19.2	ng/L		112	(70%-130%)	JLS	02/10/18	14:46
Perfluoropentanoic acid (PFPeA)	18.3	U	ND		20.1	ng/L		110	(70%-130%)			
Perfluorotetradecanoic acid (PFTeDA)	18.3	U	ND		15.9	ng/L		87	(70%-130%)			
Perfluorotridecanoic acid (PFTrDA)	18.3	U	ND		17.6	ng/L		96	(70%-130%)			
Perfluoroundecanoic acid (PFUdA)	18.3	U	ND		15.3	ng/L		83	(70%-130%)			
QC1203966060 442847003 MSD												
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	18.5	U	ND		19.3	ng/L	1	104	(0%-30%)		02/10/18	15:03
Fluorotelomer sulfonate 4:2 (4:2 FTS)	17.3	U	ND		20.8	ng/L	7	120	(0%-30%)			
Fluorotelomer sulfonate 6:2 (6:2 FTS)	17.6	U	ND		20.7	ng/L	21	118	(0%-30%)			
Fluorotelomer sulfonate 8:2 (8:2 FTS)	17.8	U	ND		17.0	ng/L	27	96	(0%-30%)			
Nafion Byproduct 1			0.00		0.00	ng/L	0					
Nafion Byproduct 2			0.00		0.00	ng/L	0					
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)			0.00		0.00	ng/L	0					
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)			0.00		0.00	ng/L	0					
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)			0.00		0.00	ng/L	0					
Perfluoro-2-methoxyacetic acid (PFMOAA)			0.00		0.00	ng/L	0					

QC Summary

Workorder: **442976**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds												
Batch 1737096												
Perfluoro-3-methoxypropanoic acid (PFMOPrA)			0.00		0.00	ng/L	0			JLS	02/10/18	15:03
Perfluoro-4-methoxybutanic acid (PFMOBA)			0.00		0.00	ng/L	0					
Perfluorobutanesulfonate (PFBS)	16.4	U	ND		17.1	ng/L	6	105	(0%-30%)			
Perfluorobutyric acid (PFBA)	18.5	U	ND		21.4	ng/L	5	116	(0%-30%)			
Perfluorodecanesulfonate (PFDS)	17.9	U	ND		17.3	ng/L	10	97	(0%-30%)			
Perfluorodecanoic acid (PFDA)	18.5	U	ND		19.8	ng/L	21	107	(0%-30%)			
Perfluorododecanoic acid (PFDoA)	18.5	U	ND		19.4	ng/L	16	105	(0%-30%)			
Perfluoroheptanesulfonate (PFHpS)	17.6	U	ND		20.5	ng/L	8	117	(0%-30%)			
Perfluoroheptanoic acid (PFHpA)	18.5	U	ND		20.3	ng/L	0	110	(0%-30%)			
Perfluorohexanesulfonate (PFHxS)	16.9	U	ND		17.7	ng/L	3	105	(0%-30%)			
Perfluorohexanoic acid (PFHxA)	18.5	U	ND		19.3	ng/L	1	104	(0%-30%)			
Perfluorononanesulfonate (PFNS)	17.8	U	ND		18.3	ng/L	19	103	(0%-30%)			
Perfluorononanoic acid (PFNA)	18.5	U	ND		19.0	ng/L	8	103	(0%-30%)			
Perfluorooctanesulfonamide (PFOSA)	17.1	U	ND		17.5	ng/L	10	102	(0%-30%)			
Perfluorooctanesulfonate (PFOS)	18.5	U	ND		18.9	ng/L	10	102	(0%-30%)			

QC Summary

Workorder: **442976**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds												
Batch 1737096												
Perfluorooctanoic acid (PFOA)	18.5	U	ND		20.1	ng/L	5	108	(0%-30%)	JLS	02/10/18	15:03
Perfluoropentanesulfonate (PFPeS)	17.4	U	ND		19.6	ng/L	2	113	(0%-30%)			
Perfluoropentanoic acid (PFPeA)	18.5	U	ND		20.1	ng/L	0	108	(0%-30%)			
Perfluorotetradecanoic acid (PFTeDA)	18.5	U	ND		16.8	ng/L	6	91	(0%-30%)			
Perfluorotridecanoic acid (PFTrDA)	18.5	U	ND		17.5	ng/L	0	95	(0%-30%)			
Perfluoroundecanoic acid (PFUdA)	18.5	U	ND		18.2	ng/L	17	98	(0%-30%)			
Semi-Volatile-GC/MS												
Batch 1739123												
QC1203971447 LCS												
1,4-Dioxane	4.00				4.07	ug/L		102	(70%-130%)	JMB3	02/15/18	17:31
**1,4-Dioxane-d8	4.00				4.41	ug/L		110	(70%-130%)			
QC1203971448 LCSD												
1,4-Dioxane	4.00				4.31	ug/L	6	108	(0%-30%)		02/15/18	17:55
**1,4-Dioxane-d8	4.00				4.09	ug/L		102	(70%-130%)			
QC1203971446 MB												
1,4-Dioxane				U	ND	ug/L					02/15/18	17:07
**1,4-Dioxane-d8	4.00				4.74	ug/L		118	(70%-130%)			

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported

QC Summary

Workorder: **442976**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

>	Result is greater than value reported
A	The TIC is a suspected aldol-condensation product
B	The target analyte was detected in the associated blank.
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
E	Concentration of the target analyte exceeds the instrument calibration range
H	Analytical holding time was exceeded
J	Value is estimated
JNX	Non Calibrated Compound
N	Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N	Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
P	Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UJ	Compound cannot be extracted
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

GC/MS Semivolatile

Product: **Analysis of 1,4-Dioxane in Drinking Water by Solid Phase Extraction (SPE) and Gas Chromatography/Mass Spectrometry**
Analytical Method: EPA 522
Analytical Procedure: GL-OA-E-073 REV# 2
Analytical Batches: 1739123 and 1739122

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
442976001	Ground Storage Tank/BPS
1203971446	Method Blank (MB)
1203971447	Laboratory Control Sample (LCS)
1203971448	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)
An LCSD was used in place of matrix QC due to limited sample volume.

LCMSMS-Misc

Product: **The Extraction and Analysis of Per and Polyfluroalkyl Substances Using LCMSMS**
Analytical Method: EPA 537
Analytical Procedure: GL-OA-E-076 REV# 4
Analytical Batches: 1737096 and 1737094

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
442976001	Ground Storage Tank/BPS
442976002	TRIP BLANK
1203966057	Method Blank (MB)
1203966058	Laboratory Control Sample (LCS)
1203966059	442847003(NonSDG) Matrix Spike (MS)
1203966060	442847003(NonSDG) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Dilutions
The following samples and/or QC were diluted due to matrix interference. The internal standard for Fluorotelomer Sulfonate 4:2 (4:2 FTS) recovered above the 150% acceptance criteria. 442976001 (Ground Storage Tank/BPS).

Analyte	442976
	001
Fluorotelomer sulfonate 4:2 (4:2 FTS)	5X

Miscellaneous Information

Additional Comments
Results reported with the X qualifier are estimated concentrations and were obtained the GenX calibration curve because authentic standards are not available at this time. 1203966057 (MB), 442976001 (Ground Storage Tank/BPS) and 442976002 (TRIP BLANK).

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page: 1 of 1
Project #:
GEL Quote #:
COC Number (1):
PO Number:

GEL Chain of Custody and Analytical Request

GEL Work Order Number: 442976

GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: H2GO
Phone #: 910-371-9949
Project/Site Name:
Fax #:
Address:
Collected by:
Send Results To:

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID (* For composites - indicate start and stop date/time)	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Should this sample be considered: Radioactive	Should this sample be considered: TSCA Regulated	Total number of containers	EPA 537	GenX + 6	Nafion Byproducts	1,4 Dioxane							<-- Preservative Type (6)
Ground Storage Tank/BPS	020118	1448	TB	N					✓	✓	✓	✓							
Ground Storage Tank/BPS	020118	1448	G	N	W				✓	✓	✓	✓							
Ground Storage Tank/BPS	020118	1448	G	N	W				✓	✓	✓	✓							

Comments
Note: extra sample is required for sample specific QC

TAT Requested: Normal: Rush: Specify: (Subject to Surcharge)
Fax Results: Yes / No
Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone
Eastern Pacific
Central Other
Mountain

Chain of Custody Signatures

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1	Bob Wilhelm	020118	1630		2/2/18	9:20
2						
3						

Sample Shipping and Delivery Details

GEL PM:
Method of Shipment:
Date Shipped:
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.
4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. *8260B* - 3, *6010B/7470A* - 1).
6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact? (YES) NO
(Cooler Temp: 2.8 C)

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: H2GO	**SDG/AR/COC/Work Order:** 442976
Received By: ZKW	**Date Received:** 2/2/18
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 4158 5141 4530

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr **Classified as: Rad 1 Rad 2 Rad 3**
Is package, COC, and/or Samples marked HAZ?		✓	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius **TEMP:** 2°C
4	Daily check performed and passed on IR temperature gun?	✓			**Temperature Device Serial #:** IR3-16 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?		✓		Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, Are Encores or Soil Kits present? Yes___ No___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes___ No___ N/A___ (If unknown, select No) VOA vials free of headspace? Yes___ No___ N/A___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	-		✓	Sample ID's and containers affected: No ID on the 1,4 Dioxane Container
10	Date & time on COC match date & time on bottles?			✓	Sample ID's affected: No Date/Time on the 1,4 Dioxane Cont.
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?	✓			
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials MEH Date 02/05/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

List of current GEL Certifications as of 16 February 2018

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122018−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−18−13
Utah NELAP	SC000122017−25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404