GEL Laboratories LLC
a member of The GEL Group INC

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

March 20, 2018

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

Re: Sample Analysis
Work Order: 445212

Dear Bob Walker:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 06, 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,

Taylor Cannon for
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: 445212 GEL Work Order: 445212

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 _____

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

Certificate of Analysis

Report Date: March 20, 2018

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

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

Client Sample ID: GST/BPS
Sample ID: 445212001
Matrix: Water
Collect Date: 02-MAR-18 09:58
Receive Date: 06-MAR-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	0.0197	1	JLS	03/09/18	1343	1744849	1
Nafion Byproduct 2	UX	ND			ng/L	0.0197	1					
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)	UX	ND			ng/L	0.0197	1					
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	UX	ND			ng/L	0.0197	1					
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	UX	ND			ng/L	0.0197	1					
Perfluoro-2-methoxyacetic acid (PFMOAA)	UX	ND			ng/L	0.0197	1					
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	UX	ND			ng/L	0.0197	1					
Perfluoro-4-methoxybutanic acid (PFMOBA)	UX	ND			ng/L	0.0197	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	0.649	1.97	ng/L	0.0197	1	JLS	03/09/18	1343	1744849	2
Fluorotelomer sulfonate 4:2 (4:2 FTS)	U	ND	1.30	3.70	ng/L	0.0197	1					
Fluorotelomer sulfonate 6:2 (6:2 FTS)	U	ND	1.30	3.74	ng/L	0.0197	1					
Fluorotelomer sulfonate 8:2 (8:2 FTS)	U	ND	1.30	3.78	ng/L	0.0197	1					
Perfluorobutanesulfonate (PFBS)	U	ND	0.649	1.75	ng/L	0.0197	1					
Perfluorobutyric acid (PFBA)	U	ND	0.649	1.97	ng/L	0.0197	1					
Perfluorodecanesulfonate (PFDS)	U	ND	0.649	1.91	ng/L	0.0197	1					
Perfluorodecanoic acid (PFDA)	U	ND	0.649	1.97	ng/L	0.0197	1					
Perfluorododecanoic acid (PFDoA)	U	ND	0.649	1.97	ng/L	0.0197	1					
Perfluoroheptanesulfonate (PFHpS)	U	ND	0.649	1.87	ng/L	0.0197	1					
Perfluoroheptanoic acid (PFHpA)	U	ND	0.649	1.97	ng/L	0.0197	1					
Perfluorohexanesulfonate (PFHxS)	U	ND	0.649	1.79	ng/L	0.0197	1					
Perfluorohexanoic acid (PFHxA)	U	ND	0.649	1.97	ng/L	0.0197	1					
Perfluorononanesulfonate (PFNS)	U	ND	0.649	1.89	ng/L	0.0197	1					
Perfluorononanoic acid (PFNA)	U	ND	0.649	1.97	ng/L	0.0197	1					
Perfluorooctanesulfonamide (PFOSA)	U	ND	0.649	1.83	ng/L	0.0197	1					
Perfluorooctanesulfonate (PFOS)	U	ND	0.649	1.97	ng/L	0.0197	1					
Perfluorooctanoic acid (PFOA)	U	ND	0.649	1.97	ng/L	0.0197	1					

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Certificate of Analysis

Report Date: March 20, 2018

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

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

Client Sample ID: GST/BPS
Sample ID: 445212001
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	0.649	1.85	ng/L	0.0197	1				
Perfluoropentanoic acid (PFPeA)	U	ND	0.649	1.97	ng/L	0.0197	1				
Perfluorotetradecanoic acid (PFTeDA)	U	ND	0.649	1.97	ng/L	0.0197	1				
Perfluorotridecanoic acid (PFTrDA)	U	ND	0.649	1.97	ng/L	0.0197	1				
Perfluoroundecanoic acid (PFUdA)	U	ND	0.649	1.97	ng/L	0.0197	1				

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 537	PFCs Extraction in Drinking Water	MXD2	03/08/18	0950	1744847

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

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Certificate of Analysis

Report Date: March 20, 2018

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

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

Client Sample ID:	GST/BPS	Project:	H2GO00117
Sample ID:	445212002	Client ID:	H2GO001
Matrix:	Water		
Collect Date:	02-MAR-18 09:58		
Receive Date:	06-MAR-18		
Collector:	Client		

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	0.918			ng/L	0.0188	1	JLS	03/09/18	1401	1744849	1
Nafion Byproduct 2	X	1.87			ng/L	0.0188	1					
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)	X	0.819			ng/L	0.0188	1					
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	X	1.84			ng/L	0.0188	1					
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	X	4.82			ng/L	0.0188	1					
Perfluoro-2-methoxyacetic acid (PFMOAA)	X	0.157			ng/L	0.0188	1					
Perfluoro-3-methoxypropanoic acid (PFMOPrA)	X	4.62			ng/L	0.0188	1					
Perfluoro-4-methoxybutanic acid (PFMOBA)	UX	ND			ng/L	0.0188	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)		15.6	0.620	1.88	ng/L	0.0188	1	JLS	03/09/18	1401	1744849	2
Fluorotelomer sulfonate 4:2 (4:2 FTS)	U	ND	1.24	3.53	ng/L	0.0188	1					
Fluorotelomer sulfonate 8:2 (8:2 FTS)	U	ND	1.24	3.61	ng/L	0.0188	1					
Perfluorobutanesulfonate (PFBS)		4.05	0.620	1.67	ng/L	0.0188	1					
Perfluorodecanesulfonate (PFDS)	U	ND	0.620	1.82	ng/L	0.0188	1					
Perfluorodecanoic acid (PFDA)		2.04	0.620	1.88	ng/L	0.0188	1					
Perfluorododecanoic acid (PFDoA)	U	ND	0.620	1.88	ng/L	0.0188	1					
Perfluoroheptanesulfonate (PFHpS)	U	ND	0.620	1.79	ng/L	0.0188	1					
Perfluoroheptanoic acid (PFHpA)		12.5	0.620	1.88	ng/L	0.0188	1					
Perfluorohexanesulfonate (PFHxS)		6.60	0.620	1.71	ng/L	0.0188	1					
Perfluorohexanoic acid (PFHxA)		19.4	0.620	1.88	ng/L	0.0188	1					
Perfluorononanesulfonate (PFNS)	U	ND	0.620	1.80	ng/L	0.0188	1					
Perfluorononanoic acid (PFNA)		1.99	0.620	1.88	ng/L	0.0188	1					
Perfluorooctanesulfonamide (PFOSA)	U	ND	0.620	1.75	ng/L	0.0188	1					
Perfluorooctanesulfonate (PFOS)		18.7	0.620	1.88	ng/L	0.0188	1					
Perfluorooctanoic acid (PFOA)		10.2	0.620	1.88	ng/L	0.0188	1					
Perfluoropentanesulfonate (PFPeS)	J	1.15	0.620	1.77	ng/L	0.0188	1					
Perfluoropentanoic acid (PFPeA)		17.7	0.620	1.88	ng/L	0.0188	1					
Perfluorotetradecanoic acid	U	ND	0.620	1.88	ng/L	0.0188	1					

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Certificate of Analysis

Report Date: March 20, 2018

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

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

Client Sample ID: GST/BPS
Sample ID: 445212002
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"												
(PFTeDA)												
Perfluorotridecanoic acid (PFTrDA)	U	ND	0.620	1.88	ng/L	0.0188	1					
Perfluoroundecanoic acid (PFUdA)	U	ND	0.620	1.88	ng/L	0.0188	1					
Fluorotelomer sulfonate 6:2 (6:2 FTS)	U	ND	6.20	17.9	ng/L	0.0188	5	JLS	03/09/18	1510	1744849	3
Perfluorobutyric acid (PFBA)		9.94	3.10	9.40	ng/L	0.0188	5					
Semi-Volatile-GC/MS												
EPA 522 1,4-Dioxane in Liquid "As Received"												
1,4-Dioxane		3.72	0.100	0.200	ug/L	0.020	1	JMB3	03/16/18	2137	1745138	4

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 522	EPA 522 Prep 1,4-Dioxane	SJ	03/15/18	0940	1745137
EPA 537	PFCs Extraction in Drinking Water	MXD2	03/08/18	0950	1744847

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"	3.26 ug/L	4.00	81	(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

QC Summary

Report Date: March 20, 2018

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

Contact: **Bob Walker**

Workorder: **445212**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds											
Batch 1744849											
QC1203984719 LCS											
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	19.9			23.0	ng/L		116	(70%-130%)	JLS	03/09/18	14:53
Fluorotelomer sulfonate 4:2 (4:2 FTS)	18.6			21.0	ng/L		113	(70%-130%)			
Fluorotelomer sulfonate 6:2 (6:2 FTS)	18.9			19.7	ng/L		105	(70%-130%)			
Fluorotelomer sulfonate 8:2 (8:2 FTS)	19.1			22.0	ng/L		115	(70%-130%)			
Perfluorobutanesulfonate (PFBS)	17.6			21.9	ng/L		125	(70%-130%)			
Perfluorobutyric acid (PFBA)	19.9			23.2	ng/L		117	(70%-130%)			
Perfluorodecanesulfonate (PFDS)	19.2			18.4	ng/L		96	(70%-130%)			
Perfluorodecanoic acid (PFDA)	19.9			20.9	ng/L		105	(70%-130%)			
Perfluorododecanoic acid (PFDoA)	19.9			18.5	ng/L		93	(70%-130%)			
Perfluoroheptanesulfonate (PFHpS)	18.9			19.6	ng/L		104	(70%-130%)			
Perfluoroheptanoic acid (PFHpA)	19.9			21.5	ng/L		108	(70%-130%)			
Perfluorohexanesulfonate (PFHxS)	18.1			20.5	ng/L		113	(70%-130%)			
Perfluorohexanoic acid (PFHxA)	19.9			21.6	ng/L		109	(70%-130%)			

QC Summary

Workorder: **445212**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Perfluorinated Compounds										
Batch 1744849										
Perfluorononanesulfonate (PFNS)	19.1			18.6	ng/L		97	(70%-130%)	JLS	03/09/18 14:53
Perfluorononanoic acid (PFNA)	19.9			18.0	ng/L		91	(70%-130%)		
Perfluorooctanesulfonamide (PFOSA)	18.4			17.4	ng/L		95	(70%-130%)		
Perfluorooctanesulfonate (PFOS)	19.9			20.2	ng/L		102	(70%-130%)		
Perfluorooctanoic acid (PFOA)	19.9			19.3	ng/L		97	(70%-130%)		
Perfluoropentanesulfonate (PFPeS)	18.7			23.1	ng/L		124	(70%-130%)		
Perfluoropentanoic acid (PFPeA)	19.9			20.9	ng/L		105	(70%-130%)		
Perfluorotetradecanoic acid (PFTeDA)	19.9			21.1	ng/L		106	(70%-130%)		
Perfluorotridecanoic acid (PFTrDA)	19.9			20.0	ng/L		101	(70%-130%)		
Perfluoroundecanoic acid (PFUdA)	19.9			21.5	ng/L		108	(70%-130%)		
QC1203984720 LCSD										
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	19.8			20.2	ng/L	13	102	(0%-30%)		03/09/18 13:26
Fluorotelomer sulfonate 4:2 (4:2 FTS)	18.5			21.6	ng/L	3	117	(0%-30%)		
Fluorotelomer sulfonate 6:2 (6:2 FTS)	18.8			22.8	ng/L	15	121	(0%-30%)		
Fluorotelomer sulfonate 8:2 (8:2 FTS)	19.0			18.5	ng/L	17	97	(0%-30%)		
Perfluorobutanesulfonate (PFBS)	17.5			18.6	ng/L	16	106	(0%-30%)		

QC Summary

Workorder: **445212**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Perfluorinated Compounds										
Batch 1744849										
Perfluorobutyric acid (PFBA)	19.8			21.9	ng/L	6	111	(0%-30%)	JLS	03/09/18 13:26
Perfluorodecanesulfonate (PFDS)	19.1			18.8	ng/L	2	98	(0%-30%)		
Perfluorodecanoic acid (PFDA)	19.8			18.3	ng/L	13	93	(0%-30%)		
Perfluorododecanoic acid (PFDoA)	19.8			20.5	ng/L	10	103	(0%-30%)		
Perfluoroheptanesulfonate (PFHpS)	18.8			20.5	ng/L	5	109	(0%-30%)		
Perfluoroheptanoic acid (PFHpA)	19.8			21.6	ng/L	0	109	(0%-30%)		
Perfluorohexanesulfonate (PFHxS)	18.1			21.6	ng/L	5	119	(0%-30%)		
Perfluorohexanoic acid (PFHxA)	19.8			19.9	ng/L	8	100	(0%-30%)		
Perfluorononanesulfonate (PFNS)	19.0			21.2	ng/L	13	112	(0%-30%)		
Perfluorononanoic acid (PFNA)	19.8			22.0	ng/L	20	111	(0%-30%)		
Perfluorooctanesulfonamide (PFOSA)	18.3			19.2	ng/L	10	105	(0%-30%)		
Perfluorooctanesulfonate (PFOS)	19.8			20.9	ng/L	4	106	(0%-30%)		
Perfluorooctanoic acid (PFOA)	19.8			19.7	ng/L	2	100	(0%-30%)		
Perfluoropentanesulfonate (PFPeS)	18.6			20.5	ng/L	12	110	(0%-30%)		
Perfluoropentanoic acid (PFPeA)	19.8			20.8	ng/L	0	105	(0%-30%)		

QC Summary

Workorder: 445212

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds											
Batch 1744849											
Perfluorotetradecanoic acid (PFTeDA)	19.8			23.0	ng/L	9	116	(0%-30%)	JLS	03/09/18	13:26
Perfluorotridecanoic acid (PFTrDA)	19.8			22.6	ng/L	12	114	(0%-30%)			
Perfluoroundecanoic acid (PFUdA)	19.8			20.7	ng/L	4	104	(0%-30%)			
QC1203984718 MB											
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)			U	ND	ng/L					03/09/18	12:51
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			UX	ND	ng/L						
Nafion Byproduct 2			UX	ND	ng/L						
Perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)			UX	ND	ng/L						
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)			UX	ND	ng/L						
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)			UX	ND	ng/L						
Perfluoro-2-methoxyacetic acid (PFMOAA)			UX	ND	ng/L						
Perfluoro-3-methoxypropanoic acid (PFMOPrA)			UX	ND	ng/L						
Perfluoro-4-methoxybutanic acid (PFMOBA)			UX	ND	ng/L						

QC Summary

Workorder: **445212**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Perfluorinated Compounds											
Batch 1744849											
Perfluorobutanesulfonate (PFBS)			U	ND	ng/L				JLS	03/09/18	12:51
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: 445212

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Perfluorinated Compounds										
Batch 1744849										
Perfluoropentanoic acid (PFPeA)			U	ND	ng/L				JLS	03/09/18 12:51
Perfluorotetradecanoic acid (PFTeDA)			U	ND	ng/L					
Perfluorotridecanoic acid (PFTrDA)			U	ND	ng/L					
Perfluoroundecanoic acid (PFUdA)			U	ND	ng/L					
Semi-Volatile-GC/MS										
Batch 1745138										
QC1203985336 LCS										
1,4-Dioxane	4.00			3.16	ug/L		79	(70%-130%)	JMB3	03/16/18 18:16
**1,4-Dioxane-d8	4.00			3.32	ug/L		83	(70%-130%)		
QC1203985335 MB										
1,4-Dioxane			U	ND	ug/L					03/16/18 17:51
**1,4-Dioxane-d8	4.00			3.57	ug/L		89	(70%-130%)		
QC1203985337 444857003 MS										
1,4-Dioxane	4.00	J	0.374	1.37	ug/L		25*	(70%-130%)		03/16/18 19:31
**1,4-Dioxane-d8	4.00		3.30	1.26	ug/L		31*	(70%-130%)		
QC1203985338 444857003 MSD										
1,4-Dioxane	4.00	J	0.374	3.59	ug/L	90*	80	(0%-30%)		03/16/18 19:57
**1,4-Dioxane-d8	4.00		3.30	3.11	ug/L		78	(70%-130%)		

Notes:

The Qualifiers in this report are defined as follows:

** Analyte is a surrogate compound

QC Summary

Workorder: **445212**

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

<	Result is less than value reported
>	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: 1745138 and 1745137

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

GEL Sample ID#	Client Sample Identification
445212002	GST/BPS
1203985335	Method Blank (MB)
1203985336	Laboratory Control Sample (LCS)
1203985337	444857003(NonSDG) Matrix Spike (MS)
1203985338	444857003(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.

Calibration Information

CCV Requirements
All associated calibration verification standards (ICV or CCV) met the +/- 30% Drift acceptance criteria for EPA 522 method. Due to current software limitations, the Continuing Calibration Summary forms (Form 07) for samples 1203985335 (MB), 1203985336 (LCS), 1203985337 (Non SDG 444857003MS), 1203985338 (Non SDG 444857003MSD) and 445212002 (GST/BPS) displayed the Maximum Drift of +/- 20%.

Quality Control (QC) Information

Surrogate Recoveries
The MS or MSD (See Below) recoveries were not within the acceptance limits. The associated MS or MSD passed recoveries, as did the LCS. It appears that the low recoveries were isolated to the MS or MSD only and were the result of a poor extraction.

Sample	Analyte	Value
1203985337 (Non SDG 444857003MS)	1, 4-Dioxane-d8	31* (70%-130%)

Spike Recovery Statement
The MS or MSD (See Below) spike recoveries were not within the acceptance limits. The associated MS or MSD passed recoveries, as did the LCS. It appears that the low spike recoveries were isolated to the MS or MSD only and were the result of a poor extraction.

Sample	Analyte	Value
1203985337 (Non SDG 444857003MS)	1, 4-Dioxane	25* (70%-130%)

MS/MSD Relative Percent Difference (RPD) Statement
The RPD values between the MS and MSD, (See Below), were not within the acceptance limits due to the large difference between the individual recoveries in each MS and MSD analyte pair. The failures may be attributed to an error in the extraction process.

Sample	Analyte	Value
1203985337MS and 1203985338MSD (Non SDG 444857003)	1, 4-Dioxane	RPD 90* (0%-30%)

Miscellaneous Information

Manual Integrations
Sample (See Below) required manual integration in order to properly identify one or more peaks and/or to correctly position the baseline as set in the calibration standard injections.

Sample	Analyte	Value
1203985336 (LCS)	Tetrahydrofuran-d8	Result 10ug/L

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: 1744849 and 1744847

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

GEL Sample ID#	Client Sample Identification
445212001	GST/BPS
445212002	GST/BPS
1203984718	Method Blank (MB)
1203984719	Laboratory Control Sample (LCS)
1203984720	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

Surrogate Recoveries

Not all surrogate recoveries were within acceptable limits for the following samples and/or QC. The samples were diluted due to matrix interference. As a result, the surrogates were diluted below recoverable levels. 445212002 (GST/BPS).

Internal Standard (ISTD) Acceptance
The internal standard responses were outside of the acceptance criteria for the following sample. The sample was reanalyzed at a dilution to confirm that the failures were the result of matrix interference. 445212002 (GST/BPS).

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. 1203984718 (MB), 445212001 (GST/BPS) and 445212002 (GST/BPS).

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: 445212

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 By-Products	1,4-Dioxane						<-- Preservative Type (6)
GST/BPS	030218	0958	TB	N					✓	✓	✓	✓						
GST/BPS	030218	0958	N	N	DW				✓	✓	✓							
GST/BPS	030218	0958	N	N	DW							✓						

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 Walker	030518	1500	Anna Taylor	3/6/18	9:00
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: C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: H2O	**SDG/AR/COC/Work Order:** 445212
Received By: ZKW	**Date Received:** 3/6/18
Carrier and Tracking Number	Circle Applicable: (FedEx Express) FedEx Ground UPS Field Services Courier Other 4158 5142 4108

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:
10	Date & time on COC match date & time on bottles?			✓	Sample ID's affected: Collection time for Dioxane is 10:00
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 BL Date ~~BL~~ 3/6/18 Page 1 of 1
BL 3/6/18

GL-CHL-SR-001 Rev 5

Subject: Samples received at GEL 3/6/18
From: Brielle Luthman <Brielle.Luthman@gel.com>
Date: 3/7/2018 11:56 AM
To: bwalker@h2goonline.com

Bob,

Sample ID GST/BPS has a collect time of 0958 on the chain of custody, the container for 1,4 Dioxane has a time of 10:00. Since all tests are logged on 1 sample ID we will use the time on the chain of custody.

Thank you,
Brielle
--

Brielle Luthman
Project Manager Assistant

GEL | Laboratories LLC

2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417
Office Main: 843.556.8171 Ext. 4487 | Fax: 843.766.1178
E-Mail: Brielle.Luthman@gel.com | Website: www.gel.com
Analytical Testing | Environmental | Engineering | Surveying

List of current GEL Certifications as of 20 March 2018

State	Certification
Alaska	17−018
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 Radiochem	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