



November 04, 2019

CGRS, Inc

Drezden Kinnaird

1301 Academy Court

Fort Collins CO 80524

Project Name - EWS #4

Project Number - 16204aa

Attached are your analytical results for EWS #4 received by Origins Laboratory, Inc. October 17, 2019. This project is associated with Origins project number Y910259-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	Y910259-01	Water	October 16, 2019 16:00	10/17/2019 09:35
MW-2	Y910259-02	Water	October 16, 2019 15:00	10/17/2019 09:35
MW-3	Y910259-03	Water	October 16, 2019 15:15	10/17/2019 09:35
MW-4	Y910259-04	Water	October 16, 2019 15:45	10/17/2019 09:35
Field	Y910259-05	Water	October 16, 2019 16:00	10/17/2019 09:35

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

ORIGINS

LABORATORY, INC

www.originslaboratory.com

4910259

page 1 of 1

Client: CGRS Project Manager: Dresden Kinnard
 Address: 1301 Academy Ct Project Name: ELWS-4
Fort Collins, CO Project Number: 162042A
 Telephone Number: 970-448-7770 970-621-1876 Samples Collected By: John Acker
 Email Address: dkinnard@cgrs.com, bwilson@cgrs.com, jacker@cgrs.com

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis			Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #	Other			
MW-1	10/16/19	16:00	3	X				X				X		1
MW-2		15:00	3	X				X				X		2
MW-3		15:15	3	X				X				X		3
MW-4		15:45	3	X				X				X		4
Field		16:00	2									X		5
														6
														7
														8
														9
														10
Relinquished By: <u>John Acker</u>	Date: <u>10/16/19</u>	Time: <u>16:45</u>	Time: <u>16:45</u>	Received By: <u>[Signature]</u>				Date: <u>10-16-6</u>			Turnaround Time: <u>24 Hr</u>			
Relinquished By: <u>Dresden Kinnard</u>	Date: <u>10/17/19</u>	Time: <u>9:35</u>	Time: <u>9:35</u>	Received By: <u>[Signature]</u>				Date: <u>10-17-6</u>			Turnaround Time: <u>48 Hr</u>			
											Standard <u>ASH</u>			

Temp Received: 29 Date Results Needed

Origins Laboratory, Inc.

Jeff Pellgrini

Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 4910259

Client: CGRS, Inc

Client Project ID: AWP EWS #4

Checklist Completed by: DM

Shipped Via: Pick-up

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 10-17-19

Airbill #: 101

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other:

Cooler Number/Temperature: 1 2.9 °C 1 °C 1 °C 1 °C (Describe)

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JP

Date/Time Reviewed 10/21/19

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

MW-1

10/16/2019 4:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-01 (Water)

PFCs by EPA 537 Mod

11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (P)	ND	1.10	3.15	ng/L	1	1929378	10/21/2019	10/23/2019	U
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF)	ND	0.552	1.56	"	"	"	"	"	U
Fluorotelomer sulfonate 10:2 (10:2 FTS)	ND	1.10	3.21	"	"	"	"	"	U
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	5.52	15.7	"	5	"	"	10/24/2019	U
Fluorotelomer sulfonate 6:2 (6:2 FTS)	252	5.52	15.9	"	"	"	"	"	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	3.45	1.10	3.21	"	1	"	"	10/23/2019	
N-ethylperfluoro-1-octanesulfonamide acetic acid	ND	1.10	3.34	"	"	"	"	"	U
N-methylperfluoro-1-octanesulfonamide acetic acid	ND	1.10	3.34	"	"	"	"	"	U
Perfluoro-1-dodecanesulfonate (PFDOS)	ND	0.552	1.67	"	"	"	"	"	U
Perfluorobutanesulfonate (PFBS)	5.63	0.552	1.49	"	"	"	"	"	
Perfluorobutyric acid (PFBA)	ND	13.8	41.8	"	25	"	"	10/24/2019	U
Perfluorodecanesulfonate (PFDS)	ND	0.552	1.62	"	1	"	"	10/23/2019	U
Perfluorodecanoic acid (PFDA)	ND	0.652	1.67	"	"	"	"	"	U
Perfluorododecanoic acid (PFDoA)	ND	0.552	1.67	"	"	"	"	"	U
Perfluoroheptanesulfonate (PFHpS)	ND	0.552	1.59	"	"	"	"	"	U
Perfluoroheptanoic acid (PFHpA)	1.49	0.552	1.67	"	"	"	"	"	J
Perfluorohexadecanoic acid (PFHxDA)	ND	0.552	1.67	"	"	"	"	"	U

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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MW-1

10/16/2019 4:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-01 (Water)

PFCs by EPA 537 Mod

Perfluorohexanesulfonate (PFHxS)	ND	0.552	1.52	ng/L	1	1929378	10/21/2019	10/23/2019	U
Perfluorohexanoic acid (PFHxA)	11.7	0.552	1.67	"	"	"	"	"	
Perfluorononanesulfonate (PFNS)	ND	0.585	1.60	"	"	"	"	"	U
Perfluorononanoic acid (PFNA)	ND	0.552	1.67	"	"	"	"	"	U
Perfluorooctadecanoic acid (PFODA)	ND	0.552	1.67	"	"	"	"	"	U
Perfluorooctanesulfonamide (PFOSA)	ND	0.552	1.55	"	"	"	"	"	U
Perfluorooctanesulfonate (PFOS)	ND	0.669	1.67	"	"	"	"	"	U
Perfluorooctanoic acid (PFOA)	0.913	0.585	1.67	"	"	"	"	"	J
Perfluoropentanesulfonate (PFPeS)	ND	0.552	1.57	"	"	"	"	"	U
Perfluoropentanoic acid (PFPeA)	6.73	2.76	8.36	"	5	"	"	10/24/2019	J
Perfluorotetradecanoic acid (PFTeDA)	ND	0.552	1.67	"	1	"	"	10/23/2019	U
Perfluorotridecanoic acid (PFTrDA)	ND	0.552	1.67	"	"	"	"	"	U
Perfluoroundecanoic acid (PFUdA)	ND	0.552	1.67	"	"	"	"	"	U
S o d i u m dodecafluoro-3H-4,8-dioxanonoate	ND	0.552	1.67	"	"	"	"	"	U

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Project Number: 16204aa
Project: EWS #4

MW-2

10/16/2019 3:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-02 (Water)

PFCs by EPA 537 Mod

11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (P	ND	1.11	3.17	ng/L	1	1929378	10/21/2019	10/23/2019	U
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF	ND	0.555	1.57	"	"	"	"	"	U
Fluorotelomer sulfonate 10:2 (10:2 FTS)	ND	1.11	3.23	"	"	"	"	"	U
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	5.55	15.8	"	5	"	"	10/24/2019	U
Fluorotelomer sulfonate 6:2 (6:2 FTS)	3.75	1.11	3.19	"	1	"	"	10/23/2019	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	1.11	3.23	"	"	"	"	"	U
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	1.11	3.36	"	"	"	"	"	U
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	1.11	3.36	"	"	"	"	"	U
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	0.555	1.68	"	"	"	"	"	U
Perfluorobutanesulfonate (PFBS)	2.88	0.555	1.50	"	"	"	"	"	
Perfluorobutyric acid (PFBA)	ND	13.9	42.0	"	25	"	"	10/24/2019	U
Perfluorodecanesulfonate (PFDS)	ND	0.555	1.63	"	1	"	"	10/23/2019	U
Perfluorodecanoic acid (PFDA)	ND	0.655	1.68	"	"	"	"	"	U
Perfluorododecanoic acid (PFDoA)	ND	0.555	1.68	"	"	"	"	"	U
Perfluoroheptanesulfonate (PFHpS)	ND	0.555	1.60	"	"	"	"	"	U
Perfluoroheptanoic acid (PFHpA)	1.14	0.555	1.68	"	"	"	"	"	J

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MW-2

10/16/2019 3:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-02 (Water)

PFCs by EPA 537 Mod

Perfluorohexadecanoic acid (PFHxDA)	ND	0.555	1.68	ng/L	1	1929378	10/21/2019	10/23/2019	U
Perfluorohexanesulfonate (PFHxS)	ND	0.555	1.53	"	"	"	"	"	U
Perfluorohexanoic acid (PFHxA)	4.12	0.555	1.68	"	"	"	"	"	
Perfluorononanesulfonate (PFNS)	ND	0.588	1.61	"	"	"	"	"	U
Perfluorononanoic acid (PFNA)	ND	0.555	1.68	"	"	"	"	"	U
Perfluorooctadecanoic acid (PFODA)	ND	0.555	1.68	"	"	"	"	"	U
Perfluorooctanesulfonamide (PFOSA)	ND	0.555	1.56	"	"	"	"	"	U
Perfluorooctanesulfonate (PFOS)	ND	0.672	1.68	"	"	"	"	"	U
Perfluorooctanoic acid (PFOA)	0.666	0.588	1.68	"	"	"	"	"	J
Perfluoropentanesulfonate (PFPeS)	ND	0.555	1.58	"	"	"	"	"	U
Perfluoropentanoic acid (PFPeA)	6.52	0.555	1.68	"	"	"	"	"	
Perfluorotetradecanoic acid (PFTeDA)	ND	0.555	1.68	"	"	"	"	"	U
Perfluorotridecanoic acid (PFTrDA)	ND	0.555	1.68	"	"	"	"	"	U
Perfluoroundecanoic acid (PFUdA)	ND	0.555	1.68	"	"	"	"	"	U
S o d i u m dodecafluoro-3H-4,8-dioxanonoate	ND	0.555	1.68	"	"	"	"	"	U

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MW-3

10/16/2019 3:15:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-03 (Water)

PFCs by EPA 537 Mod

11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (P)	ND	1.12	3.19	ng/L	1	1929378	10/21/2019	10/23/2019	U
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF)	ND	0.558	1.58	"	"	"	"	"	U
Fluorotelomer sulfonate 10:2 (10:2 FTS)	ND	1.12	3.25	"	"	"	"	"	U
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	5.58	15.9	"	5	"	"	10/24/2019	U
Fluorotelomer sulfonate 6:2 (6:2 FTS)	2.14	1.12	3.21	"	1	"	"	10/23/2019	J
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	1.12	3.25	"	"	"	"	"	U
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	1.12	3.38	"	"	"	"	"	U
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	1.12	3.38	"	"	"	"	"	U
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	0.558	1.69	"	"	"	"	"	U
Perfluorobutanesulfonate (PFBS)	88.0	0.558	1.51	"	"	"	"	"	
Perfluorobutyric acid (PFBA)	ND	2.79	8.46	"	5	"	"	10/24/2019	U
Perfluorodecanesulfonate (PFDS)	ND	0.558	1.64	"	1	"	"	10/23/2019	U
Perfluorodecanoic acid (PFDA)	ND	0.660	1.69	"	"	"	"	"	U
Perfluorododecanoic acid (PFDoA)	ND	0.558	1.69	"	"	"	"	"	U
Perfluoroheptanesulfonate (PFHpS)	ND	0.558	1.61	"	"	"	"	"	U
Perfluoroheptanoic acid (PFHpA)	2.08	0.558	1.69	"	"	"	"	"	

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MW-3

10/16/2019 3:15:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-03 (Water)

PFCs by EPA 537 Mod

Perfluorohexadecanoic acid (PFHxDA)	ND	2.79	8.46	ng/L	5	1929378	10/21/2019	10/24/2019	U
Perfluorohexanesulfonate (PFHxS)	ND	0.558	1.54	"	1	"	"	10/23/2019	U
Perfluorohexanoic acid (PFHxA)	3.43	0.558	1.69	"	"	"	"	"	
Perfluorononanesulfonate (PFNS)	ND	0.592	1.62	"	"	"	"	"	U
Perfluorononanoic acid (PFNA)	ND	0.558	1.69	"	"	"	"	"	U
Perfluorooctadecanoic acid (PFODA)	ND	0.558	1.69	"	"	"	"	"	U
Perfluorooctanesulfonamide (PFOSA)	ND	0.558	1.57	"	"	"	"	"	U
Perfluorooctanesulfonate (PFOS)	0.828	0.677	1.69	"	"	"	"	"	J
Perfluorooctanoic acid (PFOA)	1.80	0.592	1.69	"	"	"	"	"	
Perfluoropentanesulfonate (PFPeS)	ND	0.558	1.59	"	"	"	"	"	U
Perfluoropentanoic acid (PFPeA)	3.68	0.558	1.69	"	"	"	"	"	
Perfluorotetradecanoic acid (PFTeDA)	ND	0.558	1.69	"	"	"	"	"	U
Perfluorotridecanoic acid (PFTTrDA)	ND	0.558	1.69	"	"	"	"	"	U
Perfluoroundecanoic acid (PFUdA)	ND	0.558	1.69	"	"	"	"	"	U
S o d i u m dodecafluoro-3H-4,8-dioxanonoate	ND	0.558	1.69	"	"	"	"	"	U

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Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

MW-4

10/16/2019 3:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-04 (Water)

PFCs by EPA 537 Mod

11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (P)	ND	1.12	3.21	ng/L	1	1929378	10/21/2019	10/23/2019	U
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF)	ND	0.562	1.59	"	"	"	"	"	U
Fluorotelomer sulfonate 10:2 (10:2 FTS)	ND	1.12	3.27	"	"	"	"	"	U
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	5.62	16.0	"	5	"	"	10/24/2019	U
Fluorotelomer sulfonate 6:2 (6:2 FTS)	4.07	1.12	3.24	"	1	"	"	10/23/2019	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	1.12	3.27	"	"	"	"	"	U
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	1.12	3.41	"	"	"	"	"	U
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	1.12	3.41	"	"	"	"	"	U
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	0.562	1.70	"	"	"	"	"	U
Perfluorobutanesulfonate (PFBS)	ND	0.562	1.52	"	"	"	"	"	U
Perfluorobutyric acid (PFBA)	ND	14.1	42.6	"	25	"	"	10/24/2019	U
Perfluorodecanesulfonate (PFDS)	ND	0.562	1.65	"	1	"	"	10/23/2019	U
Perfluorodecanoic acid (PFDA)	ND	0.665	1.70	"	"	"	"	"	U
Perfluorododecanoic acid (PFDoA)	ND	0.562	1.70	"	"	"	"	"	U
Perfluoroheptanesulfonate (PFHpS)	ND	0.562	1.62	"	"	"	"	"	U
Perfluoroheptanoic acid (PFHpA)	ND	0.562	1.70	"	"	"	"	"	U

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
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Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

MW-4

10/16/2019 3:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-04 (Water)

PFCs by EPA 537 Mod

Perfluorohexadecanoic acid (PFHxDA)	ND	0.562	1.70	ng/L	1	1929378	10/21/2019	10/23/2019	U
Perfluorohexanesulfonate (PFHxS)	ND	0.562	1.55	"	"	"	"	"	U
Perfluorohexanoic acid (PFHxA)	1.50	0.562	1.70	"	"	"	"	"	J
Perfluorononanesulfonate (PFNS)	ND	0.597	1.64	"	"	"	"	"	U
Perfluorononanoic acid (PFNA)	ND	0.562	1.70	"	"	"	"	"	U
Perfluorooctadecanoic acid (PFODA)	ND	0.562	1.70	"	"	"	"	"	U
Perfluorooctanesulfonamide (PFOSA)	ND	0.562	1.59	"	"	"	"	"	U
Perfluorooctanesulfonate (PFOS)	ND	0.682	1.70	"	"	"	"	"	U
Perfluorooctanoic acid (PFOA)	0.638	0.597	1.70	"	"	"	"	"	J
Perfluoropentanesulfonate (PFPeS)	ND	0.562	1.60	"	"	"	"	"	U
Perfluoropentanoic acid (PFPeA)	1.08	0.562	1.70	"	"	"	"	"	J
Perfluorotetradecanoic acid (PFTeDA)	ND	0.562	1.70	"	"	"	"	"	U
Perfluorotridecanoic acid (PFTrDA)	ND	0.562	1.70	"	"	"	"	"	U
Perfluoroundecanoic acid (PFUdA)	ND	0.562	1.70	"	"	"	"	"	U
S o d i u m dodecafluoro-3H-4,8-dioxanonoate	ND	0.562	1.70	"	"	"	"	"	U

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

Field

10/16/2019 4:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-05 (Water)

PFCs by EPA 537 Mod

11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (P)	ND	1.13	3.24	ng/L	1	1929378	10/21/2019	10/24/2019	U
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF)	ND	0.567	1.60	"	"	"	"	"	U
Fluorotelomer sulfonate 10:2 (10:2 FTS)	ND	1.13	3.30	"	"	"	"	"	U
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	1.13	3.23	"	"	"	"	"	U
Fluorotelomer sulfonate 6:2 (6:2 FTS)	ND	1.13	3.26	"	"	"	"	"	U
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	1.13	3.30	"	"	"	"	"	U
N-ethylperfluoro-1-octanesulfonamidoacetic acid	ND	1.13	3.44	"	"	"	"	"	U
N-methylperfluoro-1-octanesulfonamidoacetic acid	ND	1.13	3.44	"	"	"	"	"	U
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	0.567	1.72	"	"	"	"	"	U
Perfluorobutanesulfonate (PFBS)	ND	0.567	1.53	"	"	"	"	"	U
Perfluorobutyric acid (PFBA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluorodecanesulfonate (PFDS)	ND	0.567	1.67	"	"	"	"	"	U
Perfluorodecanoic acid (PFDA)	ND	0.670	1.72	"	"	"	"	"	U
Perfluorododecanoic acid (PFDoA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluoroheptanesulfonate (PFHpS)	ND	0.567	1.63	"	"	"	"	"	U
Perfluoroheptanoic acid (PFHpA)	ND	0.567	1.72	"	"	"	"	"	U

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

Field

10/16/2019 4:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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GEL Laboratories, LLC

Y910259-05 (Water)

PFCs by EPA 537 Mod

Perfluorohexadecanoic acid (PFHxDA)	ND	0.567	1.72	ng/L	1	1929378	10/21/2019	10/24/2019	U
Perfluorohexanesulfonate (PFHxS)	ND	0.567	1.56	"	"	"	"	"	U
Perfluorohexanoic acid (PFHxA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluorononanesulfonate (PFNS)	ND	0.601	1.65	"	"	"	"	"	U
Perfluorononanoic acid (PFNA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluorooctadecanoic acid (PFODA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluorooctanesulfonamide (PFOSA)	ND	0.567	1.60	"	"	"	"	"	U
Perfluorooctanesulfonate (PFOS)	ND	0.687	1.72	"	"	"	"	"	U
Perfluorooctanoic acid (PFOA)	ND	0.601	1.72	"	"	"	"	"	U
Perfluoropentanesulfonate (PFPeS)	ND	0.567	1.62	"	"	"	"	"	U
Perfluoropentanoic acid (PFPeA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluorotetradecanoic acid (PFTeDA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluorotridecanoic acid (PFTrDA)	ND	0.567	1.72	"	"	"	"	"	U
Perfluoroundecanoic acid (PFUdA)	ND	0.567	1.72	"	"	"	"	"	U
S o d i u m dodecafluoro-3H-4,8-dioxanonoate	ND	0.567	1.72	"	"	"	"	"	U

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

PFCs by EPA 537 Mod - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1929378 - EPA 537.1 Mod, PFAS, Compliant with QSM Table B-15

BLANK (1204410250-BLK)

Prepared: 10/21/2019 Analyzed: 10/23/2019

Perfluorooctanesulfonamide (PFOSA)	ND	1.81	ng/L				-			U
Sodium dodecafluoro-3H-4,8-dioxanonanoate	ND	1.95	"				-			U
Perfluoroundecanoic acid (PFUdA)	ND	1.95	"				-			U
Perfluorotridecanoic acid (PFTTrDA)	ND	1.95	"				-			U
Perfluorotetradecanoic acid (PFTeDA)	ND	1.95	"				-			U
Perfluoropentanoic acid (PFPeA)	ND	1.95	"				-			U
Perfluoropentanesulfonate (PFPeS)	ND	1.83	"				-			U
11-chloroeicosafuoro-3-oxaundecane-1-sulfonate (P)	ND	3.67	"				-			U
Perfluorooctanesulfonate (PFOS)	ND	1.95	"				-			U
Perfluorooctadecanoic acid (PFODA)	ND	1.95	"				-			U
Perfluorononanoic acid (PFNA)	ND	1.95	"				-			U
Perfluorononanesulfonate (PFNS)	ND	1.87	"				-			U
Perfluorohexanoic acid (PFHxA)	ND	1.95	"				-			U
Perfluorohexanesulfonate (PFHxS)	ND	1.77	"				-			U
Perfluorohexadecanoic acid (PFHxDA)	ND	1.95	"				-			U
Fluorotelomer sulfonate 10:2 (10:2 FTS)	ND	3.74	"				-			U
Perfluorooctanoic acid (PFOA)	ND	1.95	"				-			U
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF)	ND	1.81	"				-			U
Perfluoroheptanoic acid (PFHpA)	ND	1.95	"				-			U
Fluorotelomer sulfonate 4:2 (4:2 FTS)	ND	3.66	"				-			U
Fluorotelomer sulfonate 6:2 (6:2 FTS)	ND	3.70	"				-			U
Fluorotelomer sulfonate 8:2 (8:2 FTS)	ND	3.74	"				-			U
N-ethylperfluoro-1-octanesulfonamido	ND	3.89	"				-			U

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Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

PFCs by EPA 537 Mod - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1929378 - EPA 537.1 Mod, PFAS, Compliant with QSM Table B-15

BLANK (1204410250-BLK)

Prepared: 10/21/2019 Analyzed: 10/23/2019

acetic acid										
N-methylperfluoro-1-octanesulfonamid	ND	3.89	"				-			U
oacetic acid										
Perfluorobutanesulfonate (PFBS)	ND	1.73	"				-			U
Perfluorobutyric acid (PFBA)	ND	1.95	"				-			U
Perfluorodecanesulfonate (PFDS)	ND	1.89	"				-			U
Perfluorodecanoic acid (PFDA)	ND	1.95	"				-			U
Perfluorododecanoic acid (PFDoA)	ND	1.95	"				-			U
Perfluoroheptanesulfonate (PFHpS)	ND	1.85	"				-			U
Perfluoro-1-dodecanesulfonate (PFDoS)	ND	1.95	"				-			U

LCS (1204410251-BKS)

Prepared: 10/21/2019 Analyzed: 10/23/2019

Fluorotelomer sulfonate 4:2 (4:2 FTS)	18.0	3.74	ng/L	18.6		97	60-145			
Perfluorododecanoic acid (PFDoA)	20.2	1.99	"	19.9		101	66-131			
Perfluorodecanoic acid (PFDA)	21.5	1.99	"	19.9		108	62-135			
Perfluorodecanesulfonate (PFDS)	18.7	1.93	"	19.2		98	53-142			
Perfluorobutyric acid (PFBA)	20.2	1.99	"	19.9		102	70-133			
Perfluorobutanesulfonate (PFBS)	17.8	1.77	"	17.6		101	68-136			
Perfluoro-1-dodecanesulfonate (PFDoS)	19.3	1.99	"	19.2		100	53-142			
N-methylperfluoro-1-octanesulfonamid	21.3	3.98	"	19.9		107	62-133			
oacetic acid										
N-ethylperfluoro-1-octanesulfonamido	18.2	3.98	"	19.9		92	63-131			
acetic acid										
11-chloroeicosafuoro-3-oxaundecane	18.9	3.75	"	18.7		101	56-130			
-1-sulfonate (P										
Fluorotelomer sulfonate 6:2 (6:2 FTS)	21.4	3.78	"	18.9		113	56-143			
Fluorotelomer sulfonate 10:2 (10:2	19.9	3.82	"	19.3		103	48-147			

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

PFCs by EPA 537 Mod - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1929378 - EPA 537.1 Mod, PFAS, Compliant with QSM Table B-15

LCS (1204410251-BKS)

Prepared: 10/21/2019 Analyzed: 10/23/2019

FTS)										
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (PF	17.0	1.85	"	18.5		92	71-128			
Perfluorohexadecanoic acid (PFHxDA)	20.7	1.99	"	19.9		104	68-131			
Fluorotelomer sulfonate 8:2 (8:2 FTS)	17.3	3.82	"	19.1		91	57-138			
Perfluoroundecanoic acid (PFUdA)	21.1	1.99	"	19.9		106	65-134			
Perfluoroheptanesulfonate (PFHpS)	19.5	1.89	"	18.9		103	66-138			
Perfluoroheptanoic acid (PFHpA)	18.9	1.99	"	19.9		95	67-135			
Sodium dodecafluoro-3H-4,8-dioxanonanoate	20.7	1.99	"	19.9		104	62-130			
Perfluorotridecanoic acid (PFTrDA)	23.0	1.99	"	19.9		116	57-149			
Perfluorotetradecanoic acid (PFTeDA)	21.5	1.99	"	19.9		108	65-143			
Perfluoropentanoic acid (PFPeA)	20.7	1.99	"	19.9		104	69-132			
Perfluoropentanesulfonate (PFPeS)	17.7	1.87	"	18.7		95	62-139			
Perfluorooctanoic acid (PFOA)	21.2	1.99	"	19.9		107	63-145			
Perfluorooctanesulfonamide (PFOSA)	20.0	1.85	"	19.9		101	68-137			
Perfluorooctadecanoic acid (PFODA)	21.0	1.99	"	19.9		106	25-138			
Perfluorononanoic acid (PFNA)	21.5	1.99	"	19.9		108	66-134			
Perfluorononanesulfonate (PFNS)	19.0	1.91	"	19.1		99	66-130			
Perfluorohexanoic acid (PFHxA)	21.1	1.99	"	19.9		106	67-133			
Perfluorooctanesulfonate (PFOS)	19.9	1.99	"	19.9		100	61-131			
Perfluorohexanesulfonate (PFHxS)	16.2	1.81	"	18.1		89	64-137			

LCSD (1204410252-BKSD)

Prepared: 10/21/2019 Analyzed: 10/23/2019

Perfluoropentanesulfonate (PFPeS)	17.8	1.83	ng/L	18.3		98	62-139	1	29	
Perfluorohexanesulfonate (PFHxS)	18.1	1.77	"	17.7		102	64-137	11	30	
Perfluorohexanoic acid (PFHxA)	22.8	1.94	"	19.4		117	67-133	8	23	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

PFCs by EPA 537 Mod - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1929378 - EPA 537.1 Mod, PFAS, Compliant with QSM Table B-15

LCSD (1204410252-BKSD)

Prepared: 10/21/2019 Analyzed: 10/23/2019

Perfluorononanesulfonate (PFNS)	18.3	1.86	ng/L	18.6		98	66-130	4	27	
Perfluorononanoic acid (PFNA)	22.1	1.94	"	19.4		114	66-134	3	27	
Perfluorooctadecanoic acid (PFODA)	20.3	1.94	"	19.4		105	25-138	3	48	
Perfluoroundecanoic acid (PFUDA)	19.9	1.94	"	19.4		103	65-134	6	28	
Perfluorooctanesulfonamide (PFOSA)	20.0	1.81	"	19.4		103	68-137	0	30	
Perfluorotridecanoic acid (PFTTrDA)	21.2	1.94	"	19.4		109	57-149	8	35	
Perfluorooctanoic acid (PFOA)	19.2	1.94	"	19.4		99	63-145	10	30	
Perfluoropentanoic acid (PFPeA)	21.2	1.94	"	19.4		109	69-132	2	30	
Perfluorotetradecanoic acid (PFTeDA)	21.3	1.94	"	19.4		110	65-143	1	30	
Perfluorohexadecanoic acid (PFHxDA)	19.6	1.94	"	19.4		101	68-131	6	30	
N-ethylperfluoro-1-octanesulfonamido acetic acid	18.0	3.88	"	19.4		93	63-131	1	25	
Perfluorooctanesulfonate (PFOS)	18.0	1.94	"	19.4		93	61-131	10	27	
N-methylperfluoro-1-octanesulfonamid oacetic acid	21.2	3.88	"	19.4		109	62-133	0	26	
Sodium dodecafluoro-3H-4,8-dioxanonoate	20.4	1.94	"	19.4		105	62-130	1	30	
11-chloroeicosafuoro-3-oxaundecane -1-sulfonate (P	18.0	3.66	"	18.3		98	56-130	5	30	
9-chlorohexadecafluoro-3-oxanonane- 1-sulfonate (PF	18.2	1.81	"	18.1		101	71-128	7	30	
Fluorotelomer sulfonate 10:2 (10:2 FTS)	18.2	3.73	"	18.8		97	48-147	9	32	
Fluorotelomer sulfonate 4:2 (4:2 FTS)	16.1	3.65	"	18.2		89	60-145	11	35	
Perfluoro-1-dodecanesulfonate (PFDoS)	18.9	1.94	"	18.8		101	53-142	2	30	
Fluorotelomer sulfonate 8:2 (8:2 FTS)	19.2	3.73	"	18.6		103	57-138	10	39	
Perfluoroheptanoic acid (PFHpA)	19.0	1.94	"	19.4		98	67-135	0	30	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

PFCs by EPA 537 Mod - Quality Control
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1929378 - EPA 537.1 Mod, PFAS, Compliant with QSM Table B-15

LCSD (1204410252-BKSD)

Prepared: 10/21/2019 Analyzed: 10/23/2019

Perfluorobutanesulfonate (PFBS)	18.3	1.73	ng/L	17.2		106	68-136	3	30	
Perfluorobutyric acid (PFBA)	20.0	1.94	"	19.4		103	70-133	1	30	
Perfluorodecanesulfonate (PFDS)	19.3	1.88	"	18.7		103	53-142	3	28	
Perfluorodecanoic acid (PFDA)	20.3	1.94	"	19.4		105	62-135	6	29	
Perfluorododecanoic acid (PFDoA)	18.3	1.94	"	19.4		94	66-131	10	30	
Perfluoroheptanesulfonate (PFHpS)	19.1	1.85	"	18.5		104	66-138	2	30	
Fluorotelomer sulfonate 6:2 (6:2 FTS)	21.8	3.69	"	18.5		118	56-143	2	36	

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 16204aa
Project: EWS #4

Notes and Definitions

- U Result not detected above the detection limit
- J Greater than the detection limit but less than the reporting limit
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



Jen Pellegrini, Project Manager

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