# Emerging Contaminant Sampling Initiative EC Form 1: Initial Groundwater Sampling Results Evaluation

Site Name:					Site ID:					
Date(s) Sampled:					Class:					
Number of Monitorin	ng Wells:					_ (at	ttach figure showing sa	mpling locations)		
Groundwater Sc	reening									
Chemical		([		creening level Recommended	l MCL)		Max. concentration detected	Check box if level exceeded		
1,4-dioxane in groun	dwater			1 ug/L (ppb)						
PFOA in groundwate	r		-	10 ng/L (ppt)						
PFOS in groundwate	r		-	10 ng/L (ppt)						
Awareness										
Other PFAS (not PFO	A/PFOS)	Any	one co	mpound over	100 ng	/L				
Total PFAS (incl. PFO	A/PFOS)	Tota	ıl conce	entration over	500 ng	/L				
STOP here if no scree	ening levels a	re exce	eeded.	No further act	tion re	quire	ed at this time.			
Proximity to Wa	ter Suppli	es								
Water supply type	Any wells w			Distance (ft)		Me	ethod(s) used to confirm locations			
Public well(s)										
Private well(s)										
= = =							or sampling these supp r sampling efforts as di	=		
Apparent Source	e(s)									
Chemical	Past use or chemical	_		Des	cribe r	easor	ns for suspecting appare	nt source(s)		
1,4-dioxane										
PFAS										
If an apparent on-site	e source is su	ispecte	d, inco	rporate furth	er wor	k into	o ongoing remedial pro	gram if possible.		
<b>Further action r</b> Use the box at the bo recommending furth	ttom of page	2 to su	ımmar	ize site-specif	d.	- -	No s or provide rationale f	or not		
Project Manager					Section					
•	l Cruden	r			Jetil	JII CIII	ici			
Bureau Director					Date	Signe	d			

# Emerging Contaminant Sampling Initiative EC Form 1: Initial Groundwater Sampling Results Evaluation

### Checklist for Completing EC Form 1:

	Did you include a value in "Maximum Level Detected" even if the screening levels were not exceeded?
	Did you enter "ND" if nothing detected or "NA" if not analyzed?
	Did you check your units (ug/L vs ng/L)?
	Did you include PFOA & PFOS when totaling "Total PFAS"?
	Did you check yes or no for "Is further action required at this time?"
	Did you include "next steps", or provide justification for not recommending further action, if RMCLs are exceeded?
	Did you attach a figure with sampling locations?
	Did you attach emerging contaminant data? ( <u>not</u> the full data package—only enough for all reviewers to double check that the form is filled out properly)
	Did you read through the internal DER Emerging Contaminant website for guidance on what to do if you have exceedances?
	Did you check with DOH-BEEI to help confirm the existence of public and private drinking water wells? DOH will handle communications with public water suppliers and local health departments.
	Is the data in EQuIS?
	Did you complete the UIS EC project current status per the internal DER Emerging Contaminant website?
	is form is to be uploaded to DecDocs when completed. A copy of the signed form is to be sent to Caryn wer (OGC) and Eric Hausamann (DER Bureau D/Sec D).
Sit	e-specific next steps or rationale for not recommending further action

### Ken W. Kloeber Consulting Engineers

 $Consulting\ Engineers$  environmental solutions • civil & sanitary engineering • planning & design

PO BOX 140 • BOSTON NY 14025 • 716-864-0012 • Fax 775-860-3804 • KloeberEng@aol.com

December 12, 2022

Submitted Via Email

Veronica Kreutzer Assistant Engineer (Environmental) NYS DEC Region 9 Division of Environmental Remediation 700 Delaware Avenue, Buffalo, NY 14209

RE: Report on Sampling for Emerging Contaminants
CMS Associates Remediation Site; NYSDEC Site # 915168

Dear Veronica:

This report is submitted on behalf of CMS Property Associates for groundwater sampling for low-level Per- and Polyfluoroalkyl Substances (PFAS) and 1-4-dioxane at the CMS Property Associates Remediation Site in Cheektowaga, NY. The sampling was undertaken pursuant to a request by the NYSDEC Region 9.

#### **Sampling Locations**

The groundwater contamination source location is a former LUST containing fuel remains, and VOCs and semi-VOCs—specifically of concern being LNAPL and DNAPL chlorinated solvents. The attached map shows the former LUST and groundwater monitoring well locations, and the approximate estimated extent of the contaminant plume. Groundwater monitoring well MW-1 exhibited the highest level of contaminates in the LUST area and therefore that well was proposed and approved by Region 9 to represent the source area.

There is no uncontaminated upgradient groundwater monitoring well for the CMS Site. Historically, the lowest-contamination upgradient well is MW-4 however its historical groundwater levels indicate a somewhat discontinuity to the groundwater regime of other nearby monitoring wells. Therefore, monitoring well MW-8 was proposed and approved by Region 9 to represent the location upgradient of the contamination source area.

Monitoring well MW-5 is nearest to and is in the direct down-gradient groundwater path of the source area. This well was taken out of service due to a broken pvc fitting on the 2" riser in 2015, but was repaired in November 2018 and returned to service. It has exhibited no issues since then therefore well MW-5 was proposed and approved by Region 9 as the down-gradient sampling location.

#### **Sampling Date and Protocol**

We sampled during a suitable, dry, clear day on May 12, 2020, in order that no cold-weather clothing or foul weather gear was needed that could possibly contain waterproofing or other chemicals that might have interfered with PFAS sample integrity. Previously scheduled sampling attempts earlier in Q2 2022 were cancelled when storms on those specific days would have required rain gear.

For QA and to minimize the possibility of sample interference we used referenced sampling protocols<sup>1,2,3</sup> (appropriately modified by the sampling Work Plan with concurrence by Region 9.)

Prior to sampling the field personnel:

- 1. Showered the morning of sampling.
- 2. Washed their hands with soap and potable water prior to sampling.
- 3. Did not handle food/containers or adhesive-backed note paper (e.g., Post-It-Notes®) before or during sampling.
- 4. Wore:
  - Cotton underclothing that had been washed at least three times, and kept clean and separated from possible contaminants before field sampling.
  - New cotton coveralls (no Tyvek® or any clothing with stain- resistant or water-repellent treatment) that were donned immediately before sampling.
  - New, clean, disposable Nitrile gloves each time a different sample was taken.

At each well we used new, disposable PVC EcoBailers<sup>TM</sup> that we did not contact with another bailer or any materials or equipment that contain PTFE (such as sample tubing, sample containers, container cap liners, tape, etc., or any other material known or suspected to contain a fluoropolymer.)

We transferred the groundwater to containers supplied by Alpha Analytical laboratory that we picked up received the day before sampling. Also Alpha Analytical laboratory supplied DI water certified to contain less than 2.0 ng/L) PFAS based on prior laboratory analysis for equipment rinse blank samples.

We collected (1) Field Blank, (1) Trip Blank, (3) Equipment Rinse Blanks.

No field duplicate was collected (as approved by the Region 9 Project Manager.) Although the *Work Plan* stated no equipment rinse blanks would be collected and the EcoBailers<sup>TM</sup> were certified PFAS-free, for additional QA we decided to obtain rinse blanks.

Immediately after collecting and labeling samples, we placed each into a separate polyethylene bag supplied by Alpha Analytical, and preserved them in a cooler with fresh, clean ice (no chemical ice packs.) Samples were then delivered to the Buffalo NY representative of Paradigm Environmental Services for transfer to Alpha Analytical laboratory for analysis. The sampling field sheets and Chain of Custody are attached.

#### **Analytical Results**

We received the ASP Level-B report from Alpha Analytical laboratory and forwarded it to Vali-Data of WNY for data validation.

The results of the three equipment rinse blanks confirm that there was no compromise of the groundwater samples due to bailer contamination.

<sup>&</sup>lt;sup>1</sup> NYSDEC, Guidelines For Sampling and Analysis of PFAS Under NYSDEC's Part 375 Remedial Programs, January 2020.

<sup>&</sup>lt;sup>2</sup> Alpha Analytical, *PFAS Sampling Instructions for non-Drinking Water (non-SDWA) for EPA Method 537 and/or LC/MS/MS Incorporating the Isotope Dilution Technique; Document 27517 Revision 1*, September 21, 2018.

<sup>&</sup>lt;sup>3</sup> NYSDEC, Groundwater Sampling for Emerging Contaminants, April 2018.

The DUSR prepared by Vali-Data demonstrates that there was no substantial issue relative to sampling, or analysis or reporting and minor adjustments to the results qualifiers were made. Both the DUSR and the Alpha Analytical report are attached, and the analytical data will be uploaded to the NYSDEC EQUIS database.

Table 1 summarizes the results of the analyses of the three groundwater wells.

#### CMS Remediation Site Emergent Contaminant Sampling May 12, 2022

		Table 1		
	<u>A</u> 1	nalytical Resul	t <u>s</u>	
<u>Location</u>		Upgradient Well MW-8	Source Area Well MW-1	Down-Gradient Well MW-5
Sample ID		189-W8- 05122022	189-W1- 05122022	189-W5- 05122022
1,4-Dioxane	μg/ l	3.47	139	58.9
Perfluorooctanoic Acid	ng/l	2.20	26.8	8.65
Perfluorooctanesulfonic Acid	ng/l	1.95	8.84	4.59
		Table 2		
	Conta	aminant Assess	<u>ment</u>	
Potential CoC			PFOA	
Highest individual PFAS	ng/l	2.97 (PFBA)	4.61 (PFPEA)	5.35 (PFPEA)
Total PFAS	ng/l	11.8	53.4	32.3
Notes:  1. There is no adopted on the CMS Site (G) 2. Based on NYSDEC higher than 10 parts 3. The highest of all of PFPEA in MW-5; 4. The total of all PFA	A, Typ guidan trillior ther ind and no	e E; non drinking ace <sup>5</sup> PFOA would a (26.8 ppt in the lividual PFAS cout a concern in no	water.) <sup>4</sup> be a CoC because LUST source area mpounds is moder n-drinking water g	e it was detected at .) ately low (5.35 ppt groundwater.

<sup>&</sup>lt;sup>4</sup> NYSDEC, *Division of Water TOGS 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, June 1998 and amendments.

<sup>&</sup>lt;sup>5</sup> NYSDEC, Sampling, Analysis, and Assessment Of Per-and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, November 2022, 3.

#### **Contaminant Assessment**

Table 2 summarizes the assessment of the emerging contaminants.

The groundwater on the CMS site is not a potable source on or off the site and there is no human contact pathway.

While *Perfluorooctanoic Acid* CAS 335-67-1 is a Contaminant of Concern, NYS currently has no groundwater quality standard for PFOA/PFOS or other PFAS compounds. Although we expect that NYS will adopt PFOA/PFOS standards, at the observed level (26.8 parts per trillion in MW-1) we do not anticipate that the level of concentration in the non-drinking-water groundwater on the CMS Site will warrant deviating from the remediation remedy that is in place for other SVOC and VOC compounds from the former LUST source area.

While 1,4-Dioxane CAS 123-91-1 is also a Contaminant of Concern, NYS currently has no groundwater quality standard for it. Although we expect that NYS will adopt a standard for 1,4-Dioxane, at the observed level (139 parts per million in MW-1) we do not anticipate that the level of concentration in the non-drinking-water groundwater will warrant deviating from the curret remediation remedy.

Therefore, I recommend no change in the current remediation strategy due to the 1,4-Dioxane or PFOA/PFOS that are present and will revisit this at such time that NYS adopts such groundwater water quality standards.

Veronica, please email me if you have any questions about our sampling or the results report, or need any additional information on this matter.

Cordially,

Ken W. Kloeber Consulting Engineers

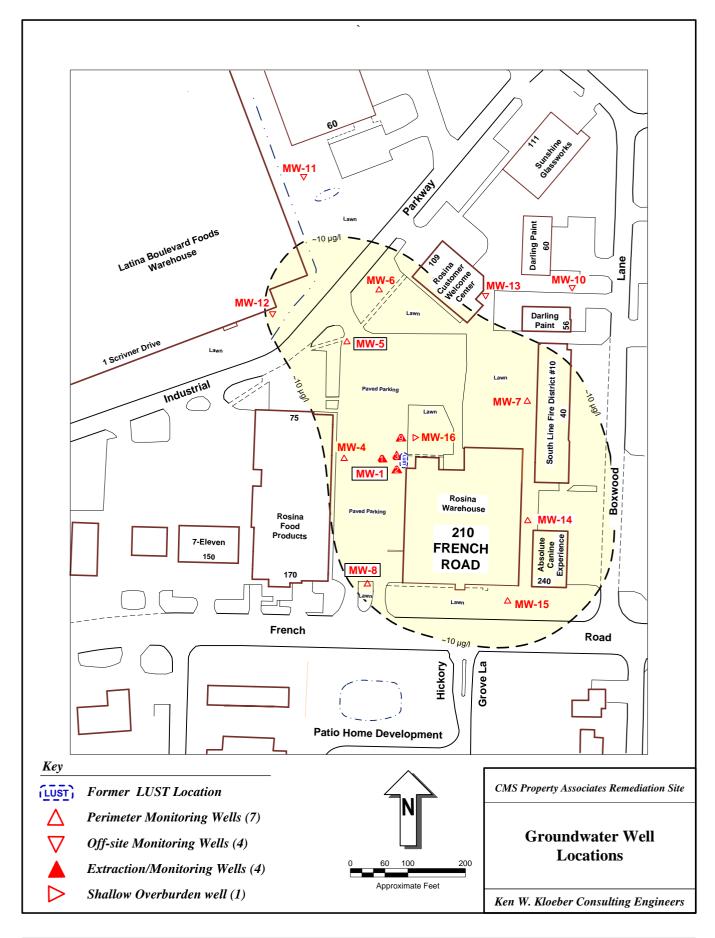
Ken W. Kloeber, PE Principal Engineer

## **ATTACHMENTS**

Groundwater Monitoring Well Locations – CMS Remediation Site

New York ASP Category B Data Deliverable Package – Alpha Analytical

This Data Usability Summary Report – Vali-Data of WNY



Semivolatile Sample Data

#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

**Project Name** : 189-02 Lab ID : L2225360-01 Client ID : 189-W1-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161209 Sample Amount : 284.48 g Extraction Method: ALPHA 23528

**Extract Volume** : 1000 uL

GPC Cleanup : N Lab Number : L2225360 Project Number : 189-02

Date Collected : 05/12/22 11:00 Date Received : 05/12/22

: 05/25/22 10:08 Date Analyzed

Date Extracted : 05/24/22

Dilution Factor : 1 : MP Analyst Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
375-22-4	Perfluorobutanoic Acid (PFBA)	4.57	1.76	0.358		
2706-90-3	Perfluoropentanoic Acid (PFPeA)	4.61	1.76	0.348		
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.06	1.76	0.209	J	
307-24-4	Perfluorohexanoic Acid (PFHxA)	3.81	1.76	0.288		
375-85-9	Perfluoroheptanoic Acid (PFHpA)	2.08	1.76	0.198		
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	1.14	1.76	0.330	J	
335-67-1	Perfluorooctanoic Acid (PFOA)	26.8	1.76	0.207	<u> </u>	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.76	1.17	U	
	(6:2FTS)					
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.76	0.605	U	
375-95-1	Perfluorononanoic Acid (PFNA)	0.446	1.76	0.274	J	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	8.84	1.76	0.443		
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.76	0.267	U	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.76	1.06	U	
	(8:2FTS)					
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.76	0.569	U	
	c Acid (NMeFOSAA)					
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.76	0.228	U	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.76	0.861	U	
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.76	0.510	U	
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.76	0.706	U	
	Acid (NEtFOSAA)					



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services Lab Number : L2225360 **Project Name** : 189-02 Project Number : 189-02

Lab ID : L2225360-01 Date Collected : 05/12/22 11:00 Client ID : 189-W1-05122022 Date Received : 05/12/22 Date Analyzed : 05/25/22 10:08

Sample Location :

Sample Matrix Date Extracted : 05/24/22 : WATER Analytical Method : 134,LCMSMS-ID Dilution Factor : 1 : MP Lab File ID : 161209 Analyst

Instrument ID : LCMS02 Sample Amount : 284.48 g Extraction Method : ALPHA 23528 GC Column : Acquity UPLC BEH C18

**Extract Volume** : 1000 uL %Solids : N/A GPC Cleanup : N Injection Volume : 3 uL

CAS NO.	Parameter	Results	RL	MDL	Qualifier	
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.76	0.327	U	
72629-94-8	Perfluorotridecanoic Acid (PFTrDA)	ND	1.76	0.288	U	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.76	0.218	U	
NONE	PFOA/PFOS, Total	35.6	1.76	0.207		



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

Project Name : 189-02 Lab ID : L2225360-02 Client ID : 189-W5-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161211
Sample Amount : 268.86 g
Extraction Method : ALPHA 23528

Extract Volume : 1000 uL GPC Cleanup : N

Date Analyzed : 05/25/22 10:41
Date Extracted : 05/24/22
Dilution Factor : 1
Analyst : MP
Instrument ID : LCMS02

Project Number : 189-02

Date Received : 05/12/22

Date Collected : 05/12/22 11:45

Lab Number

GC Column : Acquity UPLC BEH C18

: L2225360

%Solids : N/A Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
375-22-4	Perfluorobutanoic Acid (PFBA)	4.94	1.86	0.379		
2706-90-3	Perfluoropentanoic Acid (PFPeA)	5.35	1.86	0.368		
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	0.904	1.86	0.221	J	
307-24-4	Perfluorohexanoic Acid (PFHxA)	3.47	1.86	0.305		
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.36	1.86	0.209	J	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	2.33	1.86	0.350	•	
335-67-1	Perfluorooctanoic Acid (PFOA)	8.65	1.86	0.219		
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.86	1.24	U	
	(6:2FTS)				-	
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.86	0.640	U	
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.86	0.290	U	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	4.59	1.86	0.469		
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.86	0.283	U	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.86	1.13	U	
	(8:2FTS)					
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.86	0.602	U	
	c Acid (NMeFOSAA)					
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.86	0.242	U	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.86	0.911	U	
754-91-6	Perfluorooctanesulfonamide (FOSA)	0.707	1.86	0.539	J	
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.86	0.748	U	
	Acid (NEtFOSAA)					



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services Lab Number : L2225360
Project Name : 189-02 Project Number : 189-02

 Lab ID
 : L2225360-02
 Date Collected
 : 05/12/22 11:45

 Client ID
 : 189-W5-05122022
 Date Received
 : 05/12/22

 Sample Location
 : 05/25/22 10:41

Sample Matrix : WATER Date Extracted : 05/24/22

Analytical Method : 134,LCMSMS-ID Dilution Factor : 1
Lab File ID : I61211 Analyst : MP
Sample Amount : 268.86 g Instrument ID : LCMS02

Extraction Method : ALPHA 23528 GC Column : Acquity UPLC BEH C18

Extract Volume : 1000 uL %Solids : N/A GPC Cleanup : N Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.86	0.346	U	
72629-94-8	Perfluorotridecanoic Acid (PFTrDA)	ND	1.86	0.304	U	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.86	0.231	U	
NONE	PFOA/PFOS, Total	13.2	1.86	0.219		



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

Project Name : 189-02 Lab ID : L2225360-03 Client ID : 189-W8-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161222
Sample Amount : 282.37 g
Extraction Method : ALPHA 23528
Extract Volume : 1000 uL

GPC Cleanup : N

Project Number : 189-02

Date Collected : 05/12/22 12:10

Date Received : 05/12/22

Date Analyzed : 05/25/22 13:43

Date Extracted : 05/24/22

Dilution Factor : 1
Analyst : MP
Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

: L2225360

%Solids : N/A Injection Volume : 3 uL

Lab Number

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
375-22-4	Perfluorobutanoic Acid (PFBA)	2.97	1.77	0.361		
2706-90-3	Perfluoropentanoic Acid (PFPeA)	1.75	1.77	0.351	J	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.19	1.77	0.211	J	
307-24-4	Perfluorohexanoic Acid (PFHxA)	1.03	1.77	0.290	J	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	0.584	1.77	0.199	J	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.77	0.333	U	
335-67-1	Perfluorooctanoic Acid (PFOA)	2.20	1.77	0.209		
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.77	1.18	U	
	(6:2FTS)					
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.77	0.609	U	
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.77	0.276	U	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	1.95	1.77	0.446		
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.77	0.269	U	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.77	1.07	U	
	(8:2FTS)					
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.77	0.574	U	
	c Acid (NMeFOSAA)					
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.77	0.230	U	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.77	0.868	U	
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.77	0.514	U	
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.77	0.712	U	
	Acid (NEtFOSAA)					



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services Lab Project Name : 189-02 Pro

Lab ID : L2225360-03 Client ID : 189-W8-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : I61222 Sample Amount : 282.37 g Extraction Method : ALPHA 23528

Extract Volume : 1000 uL

GPC Cleanup : N

Lab Number : L2225360 Project Number : 189-02

Date Collected : 05/12/22 12:10
Date Received : 05/12/22

Date Analyzed : 05/25/22 13:43 Date Extracted : 05/24/22

Dilution Factor : 1
Analyst : MP
Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

Parameter	Results	RL	MDL	Qualifier	
Perfluorododecanoic Acid (PFDoA)	ND	1.77	0.329	U	
Perfluorotridecanoic Acid (PFTrDA)	ND	1.77	0.290	U	
Perfluorotetradecanoic Acid (PFTA)	ND	1.77	0.220	U	
PFOA/PFOS, Total	4.15	1.77	0.209		
	Perfluorododecanoic Acid (PFDoA)  Perfluorotridecanoic Acid (PFTrDA)  Perfluorotetradecanoic Acid (PFTA)	Perfluorododecanoic Acid (PFDoA)  Perfluorotridecanoic Acid (PFTrDA)  Perfluorotetradecanoic Acid (PFTA)  ND	Perfluorododecanoic Acid (PFDoA)  Perfluorotridecanoic Acid (PFTrDA)  Perfluorotetradecanoic Acid (PFTA)  ND  1.77	Parameter     Results     RL     MDL       Perfluorododecanoic Acid (PFDoA)     ND     1.77     0.329       Perfluorotridecanoic Acid (PFTrDA)     ND     1.77     0.290       Perfluorotetradecanoic Acid (PFTA)     ND     1.77     0.220	Parameter     Results     RL     MDL     Qualifier       Perfluorododecanoic Acid (PFDoA)     ND     1.77     0.329     U       Perfluorotridecanoic Acid (PFTrDA)     ND     1.77     0.290     U       Perfluorotetradecanoic Acid (PFTA)     ND     1.77     0.220     U



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

Project Name : 189-02 Lab ID : L2225360-04 Client ID : 189-RB1-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : I61223
Sample Amount : 273.2 g
Extraction Method : ALPHA 23528
Extract Volume : 1000 uL

GPC Cleanup : N

Lab Number : L2225360

Project Number : 189-02

Date Collected : 05/12/22 11:30

Date Received : 05/12/22

Date Analyzed : 05/25/22 14:00

Date Extracted : 05/24/22

Dilution Factor : 1
Analyst : MP
Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
	2 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		4.00			
375-22-4	Perfluorobutanoic Acid (PFBA)	ND	1.83	0.373	U	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.83	0.362	U	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.83	0.218	U	
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.83	0.300	U	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.83	0.206	U	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.83	0.344	U	
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.83	0.216	U	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.83	1.22	U	
	(6:2FTS)					
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.83	0.630	U	
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.83	0.286	U	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.83	0.461	U	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.83	0.278	U	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.83	1.11	U	
	(8:2FTS)					
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.83	0.593	U	
	c Acid (NMeFOSAA)					
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.83	0.238	U	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.83	0.897	U	
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.83	0.531	U	
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.83	0.736	U	
	Acid (NEtFOSAA)					



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services
Project Name : 189-02

Lab ID : L2225360-04
Client ID : 189-RB1-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161223 Sample Amount : 273.2 g Extraction Method : ALPHA 23528

Extract Volume : 1000 uL

GPC Cleanup : N

Lab Number : L2225360 Project Number : 189-02

Date Collected : 05/12/22 11:30 Date Received : 05/12/22

Date Analyzed : 05/25/22 14:00

Date Extracted : 05/24/22 Dilution Factor : 1

Analyst : MP
Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

CAS NO.						
	Parameter	Results	RL	MDL	Qualifier	
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.83	0.340	U	
72629-94-8	Perfluorotridecanoic Acid (PFTrDA)	ND	1.83	0.299	U	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.83	0.227	U	
NONE	PFOA/PFOS, Total	ND	1.83	0.216	U	



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

Project Name : 189-02 Lab ID : L2225360-05 Client ID : 189-RB5-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161224 Sample Amount : 277.21 g Extraction Method : ALPHA 23528

Extract Volume : 1000 uL

GPC Cleanup : N

Lab Number : L2225360 Project Number : 189-02

Date Collected : 05/12/22 12:00 Date Received : 05/12/22

Date Analyzed : 05/25/22 14:16

Date Extracted : 05/24/22

Dilution Factor : 1
Analyst : MP
Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
375-22-4	Postlyovekystownia Asid (PEPA)	ND	1.00	0.000	U	
	Perfluorobutanoic Acid (PFBA)	ND	1.80	0.368		
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.80	0.357	U	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.80	0.215	U	
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.80	0.296	U	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.80	0.203	U	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.80	0.339	U	
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.80	0.213	U	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.80	1.20	U	
	(6:2FTS)					
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.80	0.620	U	
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.80	0.281	U	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.80	0.454	U	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.80	0.274	U	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.80	1.09	U	
	(8:2FTS)					
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.80	0.584	U	
	c Acid (NMeFOSAA)					
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.80	0.234	U	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.80	0.884	U	
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.80	0.523	U	
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.80	0.725	U	
	Acid (NEtFOSAA)					



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services Lab Number : L2225360
Project Name : 189-02 Project Number : 189-02

Sample Location : Date Analyzed : 05/25/22 14:16 Sample Matrix : WATER Date Extracted : 05/24/22

Analytical Method : 134,LCMSMS-ID Dilution Factor : 1
Lab File ID : I61224 Analyst : MP
Sample Amount : 277.21 g Instrument ID : LCMS02

Extraction Method : ALPHA 23528 GC Column : Acquity UPLC BEH C18

Extract Volume : 1000 uL %Solids : N/A GPC Cleanup : N Injection Volume : 3 uL

			ng/l				
CAS NO.	Parameter	Results	RL	MDL	Qualifier		
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.80	0.335	U		
72629-94-8	Perfluorotridecanoic Acid (PFTrDA)	ND	1.80	0.295	U		
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.80	0.224	U		
NONE	PFOA/PFOS, Total	ND	1.80	0.213	U		



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

Project Name : 189-02 Lab ID : L2225360-06 Client ID : 189-RB8-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161225 Sample Amount : 283.13 g Extraction Method : ALPHA 23528

Extract Volume : 1000 uL

GPC Cleanup : N

Lab Number : L2225360 Project Number : 189-02

Date Collected : 05/12/22 12:30
Date Received : 05/12/22
Date Analyzed : 05/25/22 14:33

Date Extracted : 05/24/22

Dilution Factor : 1
Analyst : MP
Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

CAS NO.	Parameter	Results	RL	MDL	Qualifier	
375-22-4	Perfluorobutanoic Acid (PFBA)	ND	1.76	0.360	U	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.76	0.350	U	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.76	0.210	U	
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.76	0.290	U	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.76	0.199	U	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.76	0.332	U	
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.76	0.208	U	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.76	1.18	U	
	(6:2FTS)					
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.76	0.607	U	
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.76	0.275	U	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.76	0.445	U	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.76	0.268	U	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.76	1.07	U	
	(8:2FTS)					
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.76	0.572	U	
	c Acid (NMeFOSAA)					
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.76	0.230	U	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.76	0.865	U	
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.76	0.512	U	
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.76	0.710	U	
	Acid (NEtFOSAA)					



#### Perfluorinated Alkyl Acids by Isotope Dilution

: L2225360

Client : Paradigm Environmental Services Lab Number **Project Name** : 189-02 Project Number : 189-02

Lab ID : L2225360-06 Date Collected : 05/12/22 12:30 Client ID : 189-RB8-05122022 Date Received : 05/12/22

Sample Location : Date Analyzed : 05/25/22 14:33

Sample Matrix Date Extracted : 05/24/22 : WATER Analytical Method : 134,LCMSMS-ID Dilution Factor : 1

: MP Lab File ID : I61225 Analyst Instrument ID : LCMS02 Sample Amount : 283.13 g

Extraction Method : ALPHA 23528 GC Column : Acquity UPLC BEH C18

**Extract Volume** : 1000 uL %Solids : N/A GPC Cleanup : N Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.76	0.328	U	
72629-94-8	Perfluorotridecanoic Acid (PFTrDA)	ND	1.76	0.289	U	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.76	0.219	U	
NONE	PFOA/PFOS, Total	ND	1.76	0.208	U	



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

**Project Name** : 189-02 Lab ID : L2225360-07 Client ID : 189-TB-05122022

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161226 Sample Amount : 271.75 g Extraction Method: ALPHA 23528

**Extract Volume** : 1000 uL

GPC Cleanup : N Lab Number : L2225360 Project Number : 189-02 Date Collected : 05/12/22 12:30

Date Received : 05/12/22 Date Analyzed : 05/25/22 14:49

Date Extracted : 05/24/22

Dilution Factor : 1 : MP Analyst Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

			ng/l		
CAS NO.	Parameter	Results	RL	MDL	Qualifier
375-22-4	Postlyovekydoweie Asid (PEPA)	ND	1.04	0.075	U
	Perfluorobutanoic Acid (PFBA)	ND	1.84	0.375	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.84	0.364	U
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.84	0.219	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.84	0.302	U
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.84	0.207	U
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.84	0.346	U
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.84	0.217	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.84	1.22	U
	(6:2FTS)				
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.84	0.633	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.84	0.287	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.84	0.464	U
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.84	0.280	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.84	1.11	U
	(8:2FTS)				
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.84	0.596	U
	c Acid (NMeFOSAA)				
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.84	0.239	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.84	0.902	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.84	0.534	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.84	0.740	U
	Acid (NEtFOSAA)				



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services Lab Number : L2225360
Project Name : 189-02 Project Number : 189-02

 Lab ID
 : L2225360-07
 Date Collected
 : 05/12/22 12:30

 Client ID
 : 189-TB-05122022
 Date Received
 : 05/12/22

 Sample Location
 : 05/25/22 14:49

Sample Matrix : WATER Date Extracted : 05/24/22

Analytical Method : 134,LCMSMS-ID Dilution Factor : 1
Lab File ID : I61226 Analyst : MP
Sample Amount : 271.75 g Instrument ID : LCMS02

Extraction Method : ALPHA 23528 GC Column : Acquity UPLC BEH C18

Extract Volume : 1000 uL %Solids : N/A GPC Cleanup : N Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.84	0.342	U	
72629-94-8	Perfluorotridecanoic Acid (PFTrDA)	ND	1.84	0.301	U	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.84	0.228	U	
NONE	PFOA/PFOS, Total	ND	1.84	0.217	U	



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

**Project Name** : 189-02 Lab ID : WG1641992-1

Client ID : WG1641992-1BLANK

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : 161206 : 250 g Sample Amount

Extraction Method : ALPHA 23528 : 1000 uL

**Extract Volume** GPC Cleanup : N

Lab Number : L2225360 Project Number : 189-02 Date Collected : NA Date Received : NA

: 05/25/22 09:18 Date Analyzed

Date Extracted : 05/24/22

Dilution Factor : 1 : MP Analyst Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

		ng/l		
Parameter	Results	RL	MDL	Qualifier
Perfluorobutanoic Acid (PFBA)	ND	2.00	0.408	U
Perfluoropentanoic Acid (PFPeA)	ND	2.00	0.396	U
Perfluorobutanesulfonic Acid (PFBS)	ND	2.00	0.238	U
Perfluorohexanoic Acid (PFHxA)	ND	2.00	0.328	U
Perfluoroheptanoic Acid (PFHpA)	ND	2.00	0.225	U
Perfluorohexanesulfonic Acid (PFHxS)	ND	2.00	0.376	U
Perfluorooctanoic Acid (PFOA)	ND	2.00	0.236	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	2.00	1.33	U
(6:2FTS)				
Perfluoroheptanesulfonic Acid (PFHpS)	ND	2.00	0.688	U
Perfluorononanoic Acid (PFNA)	ND	2.00	0.312	U
Perfluorooctanesulfonic Acid (PFOS)	ND	2.00	0.504	U
Perfluorodecanoic Acid (PFDA)	ND	2.00	0.304	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	2.00	1.21	U
(8:2FTS)				
N-Methyl Perfluorooctanesulfonamidoaceti	ND	2.00	0.648	U
c Acid (NMeFOSAA)				
Perfluoroundecanoic Acid (PFUnA)	ND	2.00	0.260	U
Perfluorodecanesulfonic Acid (PFDS)	ND	2.00	0.980	U
Perfluorooctanesulfonamide (FOSA)	ND	2.00	0.580	U
N-Ethyl Perfluorooctanesulfonamidoacetic	ND	2.00	0.804	U
Acid (NEtFOSAA)				
	Perfluorobutanoic Acid (PFBA)  Perfluoropentanoic Acid (PFPeA)  Perfluorobutanesulfonic Acid (PFBS)  Perfluorohexanoic Acid (PFHxA)  Perfluoroheptanoic Acid (PFHpA)  Perfluorohexanesulfonic Acid (PFHxS)  Perfluorooctanoic Acid (PFOA)  1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)  Perfluoroheptanesulfonic Acid (PFNA)  Perfluorononanoic Acid (PFNA)  Perfluorooctanesulfonic Acid (PFOS)  Perfluorodecanoic Acid (PFDA)  1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)  N-Methyl Perfluorooctanesulfonamidoaceti c Acid (NMeFOSAA)  Perfluoroundecanoic Acid (PFUnA)  Perfluorooctanesulfonic Acid (PFDS)  Perfluorooctanesulfonic Acid (PFDS)  Perfluorooctanesulfonic Acid (PFDS)	Perfluorobutanoic Acid (PFBA)  Perfluoropentanoic Acid (PFPeA)  Perfluorobutanesulfonic Acid (PFBS)  Perfluorohexanoic Acid (PFHxA)  Perfluorohexanoic Acid (PFHxA)  Perfluorohexanesulfonic Acid (PFHxS)  Perfluorohexanesulfonic Acid (PFHxS)  Perfluorocotanoic Acid (PFOA)  ND  1H,1H,2H,2H-Perfluorocotanesulfonic Acid  (6:2FTS)  Perfluoroheptanesulfonic Acid (PFHpS)  Perfluoroneptanesulfonic Acid (PFNA)  Perfluorocotanesulfonic Acid (PFOS)  ND  Perfluorodecanoic Acid (PFDA)  ND  1H,1H,2H,2H-Perfluorodecanesulfonic Acid  (8:2FTS)  N-Methyl Perfluoroctanesulfonamidoaceti  c Acid (NMeFOSAA)  Perfluorodecanesulfonic Acid (PFDS)  ND  Perfluoroctanesulfonic Acid (PFDS)  ND  Perfluoroctanesulfonic Acid (PFDS)  ND  Perfluoroctanesulfonic Acid (PFDS)  ND  Perfluoroctanesulfonic Acid (PFDS)  ND  Perfluoroctanesulfonamide (FOSA)  ND  N-Ethyl Perfluoroctanesulfonamidoacetic	Perfluorobutanoic Acid (PFBA)  Perfluoropentanoic Acid (PFPA)  Perfluoropentanoic Acid (PFPA)  Perfluorobutanesulfonic Acid (PFBS)  Perfluorobexanoic Acid (PFBS)  Perfluorohexanoic Acid (PFHxA)  Perfluorohexanoic Acid (PFHxA)  Perfluorohexanesulfonic Acid (PFHxS)  Perfluorohexanesulfonic Acid (PFHxS)  Perfluoroctanoic Acid (PFOA)  ND  2.00  Perfluoroctanoic Acid (PFOA)  ND  2.00  1H,1H,2H,2H-Perfluoroctanesulfonic Acid  ND  2.00  Perfluorononanoic Acid (PFNA)  Perfluoroctanesulfonic Acid (PFNA)  Perfluoroctanesulfonic Acid (PFOS)  ND  2.00  Perfluorodecanoic Acid (PFDA)  ND  2.00  RezFTS)  N-Methyl Perfluoroctanesulfonic Acid  ND  2.00  Perfluoroundecanoic Acid (PFUnA)  ND  2.00  Perfluoroctanesulfonic Acid (PFUnA)  ND  2.00  Perfluoroctanesulfonic Acid (PFUnA)  ND  2.00  Perfluoroctanesulfonic Acid (PFDS)  ND  2.00  ND  2.00	Parameter         Results         RL         MDL           Perfluorobutanoic Acid (PFBA)         ND         2.00         0.408           Perfluoropentanoic Acid (PFPA)         ND         2.00         0.396           Perfluorobutanesulfonic Acid (PFBS)         ND         2.00         0.238           Perfluorohexanoic Acid (PFHxA)         ND         2.00         0.328           Perfluorohexanoic Acid (PFHpA)         ND         2.00         0.225           Perfluorohexanesulfonic Acid (PFHxS)         ND         2.00         0.376           Perfluorooctanoic Acid (PFOA)         ND         2.00         0.236           1H,1H,2H,2H-Perfluorooctanesulfonic Acid         ND         2.00         1.33           (6:2FTS)         Perfluoroheptanesulfonic Acid (PFHpS)         ND         2.00         0.688           Perfluorooctanesulfonic Acid (PFNA)         ND         2.00         0.504           Perfluorooctanesulfonic Acid (PFOS)         ND         2.00         0.504           Perfluorodecanoic Acid (PFDA)         ND         2.00         0.648           c Acid (NMeFOSAA)         ND         2.00         0.648           c Acid (NMeFOSAA)         ND         2.00         0.980           Perfluorooctanesulfonic Acid



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services
Project Name : 189-02

Lab ID : WG1641992-1

Client ID : WG1641992-1BLANK

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : I61206 Sample Amount : 250 g

Extraction Method : ALPHA 23528

Extract Volume : 1000 uL GPC Cleanup : N

Lab Number : L2225360
Project Number : 189-02
Date Collected : NA

Date Collected : NA
Date Received : NA

Date Analyzed : 05/25/22 09:18

Date Extracted : 05/24/22

Dilution Factor : 1
Analyst : MP
Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

MDL	Qualifier
0.372	U
0.327	U
0.248	U
0.236	U
	0.248



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

**Project Name** : 189-02 Lab ID : WG1641992-4

Client ID : 189-W5-05122022DUP

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : I61212 Sample Amount : 277.04 g Extraction Method: ALPHA 23528

**Extract Volume** : 1000 uL

GPC Cleanup : N Lab Number : L2225360 Project Number : 189-02

Date Collected : 05/12/22 11:45

Date Received : 05/12/22 Date Analyzed : 05/25/22 10:58

Date Extracted : 05/24/22

Dilution Factor : 1 : MP Analyst Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

			ng/l			
CAS NO.	Parameter	Results	RL	MDL	Qualifier	
375-22-4	Perfluorobutanoic Acid (PFBA)	5.16	1.80	0.368		
	<u> </u>					
2706-90-3	Perfluoropentanoic Acid (PFPeA)	5.59	1.80	0.357		
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.01	1.80	0.215	J	
307-24-4	Perfluorohexanoic Acid (PFHxA)	3.31	1.80	0.296		
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.43	1.80	0.203	J	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	2.59	1.80	0.339		
335-67-1	Perfluorooctanoic Acid (PFOA)	8.77	1.80	0.213		
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid	ND	1.80	1.20	U	
	(6:2FTS)					
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.80	0.621	U	
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.80	0.282	U	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	5.94	1.80	0.455		
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.80	0.274	U	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid	ND	1.80	1.09	U	
	(8:2FTS)					
2355-31-9	N-Methyl Perfluorooctanesulfonamidoaceti	ND	1.80	0.585	U	
	c Acid (NMeFOSAA)					
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.80	0.235	U	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.80	0.884	U	
754-91-6	Perfluorooctanesulfonamide (FOSA)	0.693	1.80	0.523	J	
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic	ND	1.80	0.726	U	
	Acid (NEtFOSAA)					



#### Perfluorinated Alkyl Acids by Isotope Dilution

Client : Paradigm Environmental Services

**Project Name** : 189-02 Lab ID : WG1641992-4

Client ID : 189-W5-05122022DUP

Sample Location :

Sample Matrix : WATER

Analytical Method : 134,LCMSMS-ID

Lab File ID : I61212 Sample Amount : 277.04 g Extraction Method : ALPHA 23528

**Extract Volume** : 1000 uL

GPC Cleanup : N Lab Number : L2225360 Project Number : 189-02

Date Collected : 05/12/22 11:45 Date Received : 05/12/22

Date Analyzed : 05/25/22 10:58

Date Extracted : 05/24/22 Dilution Factor : 1

: MP Analyst Instrument ID : LCMS02

GC Column : Acquity UPLC BEH C18

%Solids : N/A Injection Volume : 3 uL

Parameter	Results	RL	MDL	Qualifier
Perfluorododecanoic Acid (PFDoA)	ND	1.80	0.336	U
Perfluorotridecanoic Acid (PFTrDA)	ND	1.80	0.295	U
Perfluorotetradecanoic Acid (PFTA)	ND	1.80	0.224	U
_	, ,			



