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August 6, 2018

Mr. Glenn May Division of Environmental Remediation New York State Department of Environmental Conservation, Region 9 270 Michigan Avenue Buffalo, NY 14203-2999

RE: Draft Supplemental PFAS & 1,4-dioxane Sampling Letter Report Contract/Work Assignment No: D007624-21 Site/Spill No/Pin: 5565 River Road, Tonawanda, New York (915239)

Dear Mr. May:

This letter report describes the results of the additional groundwater sampling conducted at the 5565 River Road Site (915239) in Tonawanda, NY (**Figure 1**) in April 2018. Groundwater samples were collected for analysis of 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS) per a request by the New York State Department of Environmental Conservation (NYSDEC) in an e-mail dated 29 March 2018. Prior to conducting this additional groundwater sampling event, an extensive remedial investigation (RI) was conducted on the site beginning in August 2013 and was completed in December 2015. The draft RI report was submitted in April 2017.

Monitoring Well Purging and Redevelopment

The groundwater monitoring well network for the Site consists of twenty monitoring wells, including twelve onsite monitoring wells, and eight offsite wells, as shown on **Figure 2**. Prior to conducting groundwater sampling, a field visit was made on 4 April 2018 to document water levels at all onsite wells, and remove any sampling tubing or sampling materials such as bailers, pumps, etc. The purpose for removing the sampling tubing and purging the wells is because the standard sampling tubing and bailers are typically manufactured using low density polyethylene (LDPE) plastic. LDPE is suspected to contain some level of PFAS, which may potentially leach into the water when dedicated sampling equipment is left in a well.

The six wells selected for additional sampling were redeveloped to remove any groundwater from the wells and the surrounding formation which may have been potentially impacted by PFAS leached from the dedicated LDPE tubing. These wells include MW-01, MW-02, MW-03, MW-05, MW-08, and MW-10, and are shaded in blue on **Figure 2**.

Prior to well development, water levels and well depths were measured using an electronic water level indicator graduated to 0.01 ft and the volume of standing water in the well was calculated. Wells were purged using dedicated HDPE tubing (non-PFAS containing plastics), a peristaltic pump, and dedicated silicon tubing. Water quality parameters were recorded using a Horiba U-52 multi-parameter water quality meter at the start of the pumping, approximately half way



through development, and immediately prior to terminating the pumping. Parameters recorded include: pH, oxidation-reduction potential, temperature, conductivity, dissolved oxygen (DO) content, and turbidity. Wells were purged of approximately 10 well volumes, or until the well was pumped dry. Well development logs are provided in **Attachment A**.

Groundwater from the wells was either clear or turbid and dark brown in color. Purge water generated during development activities was pumped directly to the ground surface. All HDPE tubing was removed from the wells following development.

Monitoring Well Sampling

Groundwater was collected from the six monitoring wells on 26 April 2018 using low-flow sampling methodologies. Monitoring wells were purged at a rate no greater than 300 milliliters per minute using a peristaltic pump and dedicated HDPE tubing. Non-dedicated sampling equipment was decontaminated between well locations to prevent cross-contamination. Water levels were measured with a 100 ft Heron Skinny Dipper water level meter after sample collection, to limit the potential for PFAS contamination prior to sampling. Purge water generated during groundwater sampling activities was discharged to the ground surface.

During purging, field parameters were measured continuously using a Horiba-U52 with a flowthrough cell. Parameters monitored included temperature, pH, oxidation-reduction potential, conductivity, dissolved oxygen, and turbidity. Data was recorded on groundwater sampling field forms provided in **Attachment A**. Wells were purged until the field parameters stabilized, after which groundwater samples were collected. Field parameters were considered stable when the following conditions were met for three consecutive readings:

- Consecutive pH readings are ± 0.1 pH units of each other
- Consecutive DO readings are ± 10 percent of each other
- Consecutive Redox readings are ± 0.10 units of each other
- Consecutive measured specific conductance is ± 3 percent of each other
- Turbidity < 50 NTU
- Purge rate of 300 milliliters per minute.

Due to the high sensitivity of PFAS analytes and the potential sources of trace levels of PFAS, several precautions were taken to reduce the risk of false detections within samples.

The following general preparations were taken prior to and during the sampling event:

• Food Considerations

- Field personnel avoided the use of paper bags, paper packaging, aluminum foil, and coated paper packaging, or coated textiles to be in contact with food products.
- Avoided eating any fried foods.



- Did not eat snacks or meals within the immediate vicinity of the monitoring wells or inside the vehicle.
- Removed gloves prior to eating.
- Field Gear
 - Field personnel avoided plastic coating or glued materials, waterproof field books/paper, pens, and sharpie markers. The use of aluminum clipboards was allowed with loose-leaf paper.
 - Disposable nitrile gloves were worn at all times and were changed frequently.
 - Field personnel did not wear water resistant, water proof or stain treated clothing.
 - Field clothing was laundered with minimal use of soap and no fabric softeners or scented products were used. Clothing was rinsed with water after the initial cleaning.
- Field Vehicle
 - The field vehicle seats were covered with a well laundered cotton blanket for the duration of the sampling event.
- Personal Hygiene
 - Field personnel did not use shampoo, conditioner, hand cream, etc. as part of their personal cleaning/showering routine on the day of the sampling event. A shower the night before the sampling event, or a rinse with water the day of was acceptable.
 - Moisturizers, cosmetics, sunscreen, or insect repellent were not used throughout the duration of the sampling event. Handwashing with soap was allowed and the field personnel allowed extra rinsing time with water after use of soap.

Samples were collected directly from the HDPE tubing. The tubing that was connected to the Horiba-U52 during the collection of water quality parameters was cut prior to sampling. Sample tubing did not touch the sample jars during sample collection.

Laboratory Analysis

After collection, 1,4-dioxane and PFAS samples were placed in separate coolers with ice. The PFAS samples were packed within HDPE bags prior to placing in the coolers. EA shipped the coolers via FedEx overnight to the Con-Test laboratory in East Longmeadow, Massachusetts under standard chain-of-custody protocols. Con-Test is a New York State Department of Health (NYSDOH) Environmental Laboratory Analytical Program (ELAP)-certified laboratory, meeting specifications for documentation, data reduction, and reporting. Con-Test analyzed the groundwater samples for 1,4-dioxane by U.S. Environmental Protection Agency (USEPA) Method SW-846 8270D and the PFAS by USEPA Method 537/SOP 434-PFAAS (method for non-potable water) in accordance with the NYSDEC Analytical Services Protocol (ASP). Analytical data reports are included as **Attachment B**.



Mr. Glenn May NYSDEC August 6, 2018 Page 4

Data Validation

Data validation services were provided by Environmental Data Services, LTD. of Pittsburgh, Pennsylvania (EDS). Each analytical data sample generated during the groundwater sampling events was sent for third-party data validation and QA review. A separate Data Usability Summary Report (DUSR) was prepared for each of the sample delivery groups (PFAS and 1,4-Dioxane). The DUSRs are provided in **Attachment C**. The DUSRs were prepared according to the guidelines established by NYSDEC Division of Environmental Remediation QA Group as described in **Section 2.14** in the Draft River Road Remedial Investigation Report. The data were validated according to the protocols and quality control requirements of the analytical methods and the USEPA Region II Data Review Standard Operating Procedures. The data reported for the sampled media (groundwater) are considered accurate and usable as qualified for the intended purpose and to be representative of site conditions at the time of collection.

Groundwater Results

Analytical results for 1,4-dioxane are compared to the USEPA Integrated Risk Information System (IRIS) 2013 guidance value for drinking water representing a 1 x 10^{-6} cancer risk level (0.35 micrograms per liter [µg/L]). Analytical results for PFAS are compared to USEPA health advisory level for drinking water, a combined concentration of perfluorooctanoic acid and perfluorooctanesulfonic acid (70 nanograms per liter [ng/L]). Results for PFAS and 1,4-Dioxane are summarized in **Table 1**. PFC results are presented on **Figure 3**, and 1,4-dioxane results are presented on **Figure 4**.

1,4-Dioxane was detected in one of the six sampled wells (MW-10). The concentration of 4.3 μ g/L exceeded the USEPA IRIS 2013 guidance value for drinking water.

PFAS was detected in four of the six monitoring wells (MW-01, MW-02, MW-05, and MW-10). There are no NYSDEC Ambient Water Quality Standard (AWQS) values for PFCs. However, the USEPA has a Health Advisory level of 70 ng/L for either perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), or the combined value of the two analytes. These health advisories are non-enforceable and non-regulatory, but provide technical information to state agencies and other public health officials on the human health risks of contaminants in groundwater. At monitoring well MW-01, PFOS was present at a concentration of 36 ng/L and PFOA was present at a concentration of 55 ng/L, with a combined total of 91 ng/L, which



exceeds the health advisory concentration. PFOA and PFOS were not detected above 70 ng/L either individually or combined, in any other sampled wells.

Sincerely yours,

EA SCIENCE AND TECHNOLOGY

am

Robert S. Casey Project Manager

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Figures

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MWL % Pt/Figure2_ 14D 10 200 Ş 7624\D007624

Legend

- ٠ Groundwater Monitoring Well Location
- Open Surface Water Channel
 - Surface Water Conduit/Culvert
- Site Boundary

Figure 2 Groundwater Monitoring Well Locations 5565 River Road (915239) Tonawanda, New York

Map Date: 6/7/2018 Source: ESRI ArcGIS Map Service Projection: NAD 1983 State Plane New York West



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Legend

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- Monitoring Well Location
 Monitoring Well Location Not Sampled
- Open Surface Water Channel
- Surface Water Conduit/Culvert
- Site Boundary

Notes: All results reported in ng/L EPA = New York State Department of Environmental Conservation ng/L = Nanogram(s) per liter Figure 3 Groundwater Sampling Results - April 2018 PFOS and PFOA Results and Other PFC Detects 5565 River Road (915239) Tonawanda, New York

> Map Date: 6/7/2018 Source: ESRI ArcGIS Map Service Projection: NAD 1983 State Plane New York West



400 L Feet



Legend

800



- Monitoring Well Location
- Monitoring Well Location Not Sampled
- Open Surface Water Channel
- Surface Water Conduit/Culvert
- Site Boundary

Notes: All results reported in ug/L EPA = New York State Department of Environmental Conservation ug/L = Microgram(s) per liter Figure 4 Groundwater Sampling Results - April 2018 1,4-Dioxane Results 5565 River Road (915239) Tonawanda, New York

> Map Date: 6/7/2018 Source: ESRI ArcGIS Map Service Projection: NAD 1983 State Plane New York West



Tables

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	Location ID	915236-MV	V-01	915236-MW	J-02	915236-MW	-03	915236-MW	7-05	915236-MW	V-08	915236-MV	N-10	915236-MW-	DUP	[
	1.4-Dioxane SamplesLab ID	18D1337-	01	18D1337-(02	18D1337-6	3	18D1337-0	14	18D1337-	05	18D1337	-06	18D1337-(07	I
	PFC Samples Lab ID	18D1336-	01	18D1336-(02	18D1336-(3	18D1336-0	n4	18D1336-	05	18D1336	.06	18D1336-(07	I
	Sample Type	Groundwa	ter	Groundwa	ter	Groundwa	ter	Groundwa	ter	Groundwa	ter	Groundwa	ater	Groundwa	ter	Guidance
Parameter List	Sample Date	26-Apr-1	8	26-Apr-1	8	26-Apr-1	8	26-Apr-1	8	26-Apr-1	8	26-Apr-1	18	26-Apr-1	8	Values
				Met	hod SV	W-846 8270D										
1,4-Dioxane	μg/l	(<0.20)	U	(<0.20)	U	(<0.20)		(<0.20)	U	(<0.28)	U	4.3		(<0.24)	U	0.35 1
				Meth	od SO	P 434-PFAAS										
NEtFOSAA	ng/L	< 2	U	< 2	U	< 2	U	< 2	U	< 3	U	< 2	U	< 2	U	
Perfluorobutanesulfonic acid (PFBS)	ng/L	5.9		< 2	U	< 2	U	2.2		< 3	U	< 2	U	< 2	U	
Perfluorobutanoic acid	ng/L	6.2		3.9		< 3	U	< 3	U	< 4.5	U	< 3	U	< 3	U	
Perfluorodecanesulfonic acid	ng/L	< 3	U	< 3	U	< 3	U	< 3	U	< 4.5	U	< 3	U	< 3	U	
Perfluorodecanoic acid	ng/L	< 2	U	< 2	U	< 2	U	< 2	U	< 3	U	< 2	U	< 2	U	
Perfluorododecanoic acid	ng/L	< 2	U	< 2	U	< 2	U	< 2	U	< 3	U	< 2	U	< 2	U	
Perfluoroheptanesulfonic acid	ng/L	< 3	U	< 3	U	< 3	U	< 3	U	< 4.5	U	< 3	U	< 3	U	
Perfluoroheptanoic acid	ng/L	6.3		< 2	U	< 2	U	2.2		< 3	U	< 2	U	< 2	U	
Perfluorohexanesulfonic acid (PFHxS)	ng/L	11		< 2	U	< 2	U	2.7		< 3	U	< 2	U	< 2	U	
Perfluorohexanoic acid	ng/L	5.5		< 2	U	< 2	U	4		< 3	U	< 2	U	< 2	U	
Perfluorononanoic acid	ng/L	2.1		< 2	U	< 2	U	< 2	U	< 3	U	< 2	U	< 2	U	
Perfluorooctanesulfonic acid (PFOS)	ng/L	36		4		< 2	U	4.4		< 3	U	< 2	U	2.2		70 2
Perfluorooctanoic acid (PFOA)	ng/L	55		16		< 2	U	22		< 3	U	7		6.9		70 ²
Perfluoropentanoic acid	ng/L	< 3	U	< 3	U	< 3	U	< 3	U	< 4.5	U	5		< 3	U	
Perfluorotetradecanoic acid	ng/L	< 2	U	< 2	U	< 2	U	< 2	U	< 3	U	< 2	U	< 2	U	
Perfluorotridecanoic acid	ng/L	< 2	U	< 2	U	< 2	U	< 2	U	< 3	U	< 2	U	< 2	U	
Perfluoroundecanoic acid	ng/L	< 2	U	< 2	U	< 2	U	< 2	U	< 3	U	< 2	U	< 2	U	
PFOSA	ng/L	< 3	U	< 3	U	< 3	U	< 3	U	< 4.5	U	< 3	U	< 3	U	

Table 1 Summary of Detected PerFluorinated Compounds and 1 4-Diovane in Groundwater Samples

-- = Not analyzed.
 U = The analyte was analyzed for, but was not detected above the sample reporting limit.
 μg/l = micrgrams per liter = parts per billion (ppb)
 ng/l = nanograms per liter = parts per trillion (ppt)
 Values shown in **bold** exceed the guidance value indicated.
 Data provided by Con-Test Analytical.

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Attachment A

Groundwater Purge Logs

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			GROUNDV	VATER SAM	PLING PURC	GE FORM					
Well I.D.:			EA Personn	el:		Client:					
	915239-MW-0	1	Stephen Soldr	ner/Lindsay Main	rs		NYSDEC				
Location:	5565 River Road		Well Condit	ion:		Weather:					
	Tonawanda, Ne	w York	Good			Clear, Mod. W	/ind, 45F				
Sounding M	lethod:		Gauge Date	:		Measuremen	nt Kef:				
Heron Skinny	Dipper WLW (P	FC Free)	26-Apr-18	•		Well Diameter (in):					
+3.0'	wii (it).		1450	•			ter (iii).				
13.0			1400			2					
Purge Date:					Purge Time:						
26-Apr-18					1123	23					
Purge Meth	od:				Field Technic	ian:					
Peristaltic Pu	np				SS/LM						
				Wall Va	1						
A Wall Dar	th (ft).		D Well Vol	vven vo	lume	Depth/Heig	ht of Top of P	VC			
A. Wen Dep 13 55	, (II).		D. Well Vol	0.163		_0 2		vC.			
B. Depth to	Water (ft):		E. Well Volu	(gal) C*D):	:	Pump Type:					
8.18	(10)		2	0.875		Peristaltic					
C. Liquid D	epth (ft) (A-B):		F. Three We	ll Volumes (ga	l) (E3):	Pump Intake Depth:					
5.37				2.63		13.5					
			I	Vater Quality	Parameters						
Time	Temperature	pН	ORP	Conductivity	Turbidity	DO	DTW	Rate	Volume		
(hrs)	(°C)	(Stnd. Units)	(mV)	(S/m)	(NTU)	(mg/L)	(ft btoc)	(Lpm)	(liters)		
1124	10.77	7.79	-129	2.56	434	13.52	*	0.30			
1127	7.15	7.06	-107	1.86	32.6	1.18		0.30	0.9		
1130	6.79	6.95	-83	1.55	8.5	0.00		0.30	1.8		
1133	6.68	6.90	-72	1.52	5.9	0.00		0.30	2.7		
1136	6.70	6.89	-71	1.52	5.1	0.00		0.30	3.6		
1139	6.62	6.88	-68	1.51	3.7	0.00		0.30	4.5		
1142	6.67	6.87	-66	1.51	3.0	0.00		0.30	5.4		
1145	6.64	6.85	-65	1.50	28	0.00		0.30	63		
Total Quant	ity of Water Re	moved (gal):		63		Sampling Ti	me	11/15			
Samplers	ity of Water K	liloved (gai).	SS/IM	0.5		Split Sample	e With	MS/	MSD		
Sampling D	ate:		4/26/2018			Sample Typ	e'	GW	Grah		
Camping D			1/ 20/ 2010			Sumple Typ	~ •	311	5.40		
COMMENT	'S AND OBSEI	RVATIONS:									
	*Gauged after s	ampling due to P	FC analysis								
	MS/MSD for 1,	4 Dioxane and PF	С								



EA Engineering, P.C. EA Science and Technology

			EAD			Client				
vven I.D.:	015720 NAM O	7	EA Personn	el:	10	Client:	NVCDFC			
Location:	5565 River Road		Well Condi	ion:	irs	Weather:	N15DEC			
Locution	Tonawanda, Ne	w York	Good			Clear, Mod. W	Vind, 50F			
Sounding N	lethod:		Gauge Date	•		Measureme	nt Ref:			
Heron Skinny	v Dipper WLM (P	FC Free)	26-Apr-18			TOC				
Stick Up/D	own (ft):		Gauge Time	:		Well Diame	ter (in):			
+3.0'			1455			2				
Purge Date:					Purge Time:					
26-Apr-18	3				1254	<u>l</u>				
Purge Meth	od:				Field Technic	ian:				
Peristaltic Pu	mp				SS/LM					
				Well Vo	olume					
A. Well De	oth (ft):		D. Well Vol	ume (ft):		Depth/Height of Top of PVC:				
11.52	2		0.163			-0.2	•			
B. Depth to	Water (ft):		E. Well Volu	ume (gal) C*D)):	Pump Type:				
4.78	3		1.10			Peristaltic				
C. Liquid D	epth (ft) (A-B):		F. Three We	ll Volumes (ga	al) (E3):	Pump Intak	e Depth:			
6.74	Ł		3.30			11.5				
			I	Vater Quality	/ Parameters					
Time	Temperature	pН	ORP	Conductivity	Turbidity	DO	DTW	Rate	Volume	
(hrs)	(°C)	(Stnd. Units)	(mV)	(S/m)	(NTU)	(mg/L)	(ft btoc)	(Lpm)	(liters)	
1256	10.59	6.91	-51	1.17	28.0	17.08	*	0.3		
1259	9.51	6.85	-36	0.914	21.1	13.01		0.3	0.9	
1302	8.68	6.75	-9	0.820	9.0	9.45		0.3	1.8	
1305	8.32	6.71	1	0.806	5.3	7.19		0.3	2.7	
1308	8.34	6.69	5	0.802	3.9	5.61		0.3	3.6	
1311	8 74	6.69	4	0 891	97	4 53		0.3	4.5	
1314	8.79	6.68	5	0.897	9.5	3.71		0.3	5.4	
1217	8.73	6.68	-5	0.807	0.7	2.52		0.3	6.2	
1317	8.75	6.68	-0	0.895	9.7	3.00		0.3	7.2	
1520	0.75	0.00	-4	0.895	9.1	5.11		0.5	1.2	
									320	
Total Quan	tity of Water Re	emoved (gal):		7.2		Sampling Ti	ime:	13	20	
Total Quan Samplers:	tity of Water Re	emoved (gal):	SS/LM	7.2	_	Sampling Ti Split Sampl	ime: e With:	13 N	/A	
Total Quan Samplers: Sampling D	tity of Water Re Pate:	emoved (gal):	SS/LM 4/26/2018	7.2	-	Sampling Ti Split Sample Sample Typ	ime: e With: e:	13 N GW	/ A Grab	
Total Quan Samplers: Sampling D	tity of Water Re Pate:	emoved (gal):	SS/LM 4/26/2018	7.2	-	Sampling Ti Split Sampl Sample Typ	ime: e With: e:	13 Nj GW	/A Grab	
Total Quan Samplers: Sampling E COMMENT	tity of Water Re Date:	emoved (gal): RVATIONS:	SS/LM 4/26/2018	7.2	-	Sampling Ti Split Sampl Sample Typ	ime: e With: e:	13 N GW	/A Grab	



EA Engineering, P.C. EA Science and Technology

			EA Dereser			Client						
wen I.D.:	915220-MM 0	3	Stephen Cold	eli par/Lindeau Mai	*0	Chent:	NVSDEC					
Location:	5565 River Road	1	Well Condi	her/Endsay Mar	15	Weather:	NIGDEC					
20000000	Tonawanda, Ne	w York	Good			Sunny, 42F						
Sounding N	Aethod:		Gauge Date	:		Measureme	M NYSDEC er: 42F rement Ref: iameter (in): 2 -0.2 Fype: ic Intake Depth: 22					
Heron Skinn	y Dipper WLM (P	FC Free)	26-Apr-18	;		TOC						
Stick Up/D	own (ft):		Gauge Time	2:		Well Diame	ter (in):					
+2.5'			1358	3		2						
Purge Date	:				Purge Time:							
26-Apr-1	8				1252	2						
Purge Meth	iod:				Field Technic	ian:						
Peristaltic Pu	mp				SS/LM							
				Well Vo	olume							
A. Well De	pth (ft):		D. Well Vol	ume (ft):		Depth/Height of Top of PVC:						
22.	2		0.163	\$		-0.2						
B. Depth to	Water (ft):		E. Well Volu	ume (gal) C*D)	:	Pump Type:	Pump Type:					
12.9	8 No setto (Ct) (A. D):		1.5	11 37 - 1	1) (E2).	Peristaltic						
	рертп (гт) (А-Б):		F. Inree we	ii volumes (ga	II) (E3):	Pump Intak	e Depth:					
).2			4.51									
				Nater Quality	Parameters							
Time	Temperature	pН	ORP	Conductivity	Turbidity	DO	DTW	Rate	Volume			
(hrs)	(°C)	(Stnd. Units)	(mV)	(S/m)	(NTU)	(mg/L)	(ft btoc)	(Lpm)	(liters)			
1255	16.25	7.73	138	0.023	12.4	7.65	*	0.25				
1258	16.16	7.34	142	0.622	9.7	3.45		0.25	0.75			
1301	15.94	7.08	144	0.620	7.9	2.38		0.25	1.5			
1304	15.65	7.07	146	0.618	13.8	2.11		0.25	2.25			
1307	15.39	7.07	147	0.614	12.2	1.92		0.25	3			
1310	15.20	7.04	149	0.614	10.6	1.82		0.25	3.75			
1313	15.00	7.03	150	0.617	12.5	1.82		0.25	4.5			
1316	14.80	7.00	152	0.612	12.0	1.82		0.25	5.25			
1319	14.71	6.99	153	0.605	11.0	1.78		0.25	6			
1322	14.68	6.98	154	0.598	10.8	1.87		0.25	6.75			
	1											
				6.75		Sampling Ti	ime:	13	322			
Total Quan	tity of Water Re	emoved (gal):	CC /1 M		-	C.111 C1	- 147:11	N.T.				
Total Quan Samplers:	tity of Water Re	emoved (gal):	SS/LM		-	Split Sample	e With:	N,	/ A Creala			
Total Quan Samplers: Sampling I	tity of Water Re Date:	emoved (gal):	SS/LM 4/26/2018			Split Sampl Sample Typ	e With: e:	N, GW	/ A Grab			
Total Quan Samplers: Sampling I COMMEN	tity of Water Re Date: FS AND OBSEI	emoved (gal):	SS/LM 4/26/2018		-	Split Sample Sample Typ	e With: e:	N, GW	Grab			



EA Engineering, P.C. EA Science and Technology

			GROUNDW	VATER SAM	PLING PURG	GE FORM					
Well I.D.:			EA Personn	el:		Client:					
	915239-MW-0	5	Stephen Soldı	ner/Lindsay Ma	irs		NYSDEC				
Location:	5565 River Road	l	Well Condi	tion:		Weather:					
	Tonawanda, Ne	w York	Good			Sunny, 42F					
Sounding N	lethod:		Gauge Date	:	Measurement Ref:						
Heron Skinny	Dipper WLM (P	FC Free)	26-Apr-18			TOC	1 ()) -				
	own (ff):		Gauge Time			well Diame	ter (in):				
+3.0			1523	,		2					
Purge Date:					Purge Time:						
26-Apr-18	•				140	5					
Purge Meth	od:				Field Lechnic	ian:					
Peristaltic Pui	np				55/ LM						
				Well V	olume						
A. Well Dep	oth (ft):		D. Well Vol	ume (ft):		Depth/Heig	ht of Top of P	VC:			
15.66			0.163	5		-0.2	-				
B. Depth to	Water (ft):		E. Well Volume (gal) C*D):			Pump Type:					
6.06	1 - (CI) (A - D)		1.57	11 37 - 1	1) (E2).	Peristaltic					
	ертп (п) (А-б):		4.69			15 5	e Depth:				
			4.07			10.0	, 				
			I	Nater Quality	/ Parameters						
Time	Temperature	pН	ORP	Conductivity	Turbidity	DO	DTW	Rate	Volume		
(hrs)	(°C)	(Stnd. Units)	(mV)	(S/m)	(NTU)	(mg/L)	(ft btoc)	(Lpm)	(liters)		
1408	11.48	7.13	-85	1.45	43.5	0.35	*	0.25			
1411	10.82	6.91	-91	1.38	15.2	0.00		0.25	0.75		
1414	10.73	6.91	-90	1.28	11.0	0.00		0.25	1.5		
1417	10.11	6.87	-61	1.12	15.7	0.00		0.25	2.25		
1420	10.14	6.83	-42	1.10	13.5	0.00		0.25	3		
1423	10.06	6.82	-31	1.10	13.6	0.00		0.25	3.75		
1427	10.32	6.81	-18	1.06	17.1	0.00		0.25	4.5		
1430	10.18	6.82	-13	0.944	14.8	0.00		0.25	5.25		
1433	10.10	6.86	-11	0.845	10.0	0.00		0.25	6		
1436	10.05	6.89	-10	0.821	8.6	0.00		0.25	6.75		
1439	10.15	6.90	-10	0.813	7.6	0.00		0.25	7.5		
1442	10.22	6.90	-10	0.814	7.4	0.00		0.25	8.25		
Total Quant	ity of Water Re	emoved (gal):		8.25	_	Sampling T	ime:	14	142		
Samplers:			SS/LM		-	Split Sampl	e With:	N	/A		
Sampling D	ate:		4/26/2018		-	Sample Typ	e:	GW	Grab		
COMMENT	'S AND OBSEI	RVATIONS:									
	*Gauged after s	ampling due to Pl	FC analysis								
L											



Well I.D.: 92 Location: 556 Tor Sounding Meth Heron Skinny Dip Stick Up/Down +3.0' Purge Date: 26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	015239-MW-(65 River Roa nawanda, No nod: pper WLM (I n (ft): (ft): (ft):)8 d ew York PFC Free)	EA Personno Stephen Soldr Well Condit Good Gauge Date 26-Apr-18 Gauge Time Dry after sam	el: ner/Lindsay Ma ion: : : : ple	hirs Purge Time:	Client: Weather: Sunny, 41F Measuremen TOC Well Diame 2	NYSDEC nt Ref: ter (in):		
Jecoation: 556 Tor Sounding Meth Heron Skinny Dip Stick Up/Down +3.0' Purge Date: 26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): https://www.openation.com/file/file/file/file/file/file/file/file	8 d ew York PFC Free)	Stephen Soldr Well Condit Good Gauge Date 26-Apr-18 Gauge Time Dry after sam	er/Lindsay Ma ion: : : ple	Purge Time:	Weather: Sunny, 41F Measuremer TOC Well Diame 2	nt Ref: ter (in):		
Location: 556 Tor Sounding Meth Heron Skinny Dip Stick Up/Down +3.0' Purge Date: 26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Time 1118	(ft): http://www.example.com/file/file/file/file/file/file/file/file	a ew York PFC Free)	Good Gauge Date 26-Apr-18 Gauge Time Dry after sam	non: : ple	Purge Time:	Weather: Sunny, 41F Measuremen TOC Well Diame 2	nt Ref: ter (in):		
Sounding Meth Heron Skinny Dip Stick Up/Down +3.0' Purge Date: 26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): http://www.nudical.nudi	PFC Free)	Gauge Date 26-Apr-18 Gauge Time Dry after sam	: ple	Purge Time:	Measuremen TOC Well Diame	nt Ref: ter (in):		
Heron Skinny Dip Stick Up/Down +3.0' Purge Date: 26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): (ft):	PFC Free)	26-Apr-18 Gauge Time Dry after sam	: ple	Purge Time:	TOC Well Diame	ter (in):		
A: Well Depth (17.79 B: Depth to Wat Dry after sample C. Liquid Depth N/A Time Time (hrs) 1118	(ft): (ft): (ft):		Gauge Time Dry after sam	:: ple	Purge Time:	Well Diame	ter (in):		
+3.0' Purge Date: 26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): ter (ft):		Dry after sam	ple	Purge Time:	2			
Purge Date: 26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): ter (ft):				Purge Time:				
26-Apr-18 Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): ter (ft):								
Purge Method: Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): .ter (ft):				111	5			
Peristaltic Pump A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): .ter (ft):				Field Technic	ian:			
A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): .ter (ft):				SS/LM				
A. Well Depth (17.79 B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	(ft): .ter (ft):			Well V	olume				
B. Depth to Wat Dry after sample C. Liquid Depth N/A Time Te (hrs) 1118	ter (ft):		D. Well Vol	ume (ft):		Depth/Heig	ht of Top of P	VC:	
C. Liquid Depth N/A Time Te (hrs)			E. Well Volu	ıme (gal) C*D)):	Pump Type:			
Time Te (hrs)	h (ft) (A-B)	:	F. Three We	ll Volumes (g	al) (E3):	Pump Intak 17.5	e Depth:		
Time Te (hrs) 1118									
Time Te (hrs)			V	Vater Qualit	y Parameters				
(hrs)	emperature	pH	ORP	Conductivity	y Turbidity	DO	DTW	Rate	Volume
1118	(°C)	(Stnd. Units)	(mV)	(S/m)	(NTU)	(mg/L)	(ft btoc)	(Lpm)	(liters)
1110	10.46	7.77	80	1.41	>1000	15.52	*	0.25	
1121	9.68	7.48	104	1.42	490	11.53		0.25	0.75
1124	9.56	7.46	112	1.42	139	11.85		0.25	1.5
1127	9.27	7.44	118	1.41	32.0	11.20		0.25	2.25
1130	9.25	7.43	122	1.42	17.7	10.58		0.25	3
1133	9.41	7.40	125	1.42	11.0	9.79		0.25	3.75
1136	9.49	7 36	128	1.43	10.8	712		0.25	45
1130	0.50	7.34	120	1.43	12.0	6.26		0.25	5.25
11.12	9.50	7.34	100	1.43	12.0	5.20		0.25	5.25
1142	9.61	7.35	132	1.42	12.7	5.91		0.25	6
1145	9.57	7.36	133	1.41	10.0	6.30		0.25	6.75
T-1-10	- (147 + - 2)					Compa ¹			
Samplere	or water K	emoveu (gai):	CC /T M	6./5	_	Sampling I	me: Mith	 D	licato
Samplers. Sampling Date:			4/26/2018		_	Sample Tun	ρ.	CW/	Grah
Samping Date.	•		-1/20/2010		_	Sample Typ	·. ·		Giab
COMMENTS A	AND OBSE	RVATIONS:	EC analyzic		Field duplicate	for 1, 4 Dioxane	collected at this	location	
"Ga	augeu atter s	sampling due to Pl	C analysis						



			GROUND	VATER SAM	PLING PUK	JE FORM					
Well I.D.:			EA Personn	el:		Client:					
	915239-MW-1	0	Stephen Sold	ner/Lindsay Ma	irs		NYSDEC				
Location:	5565 River Road		Well Condi	tion:		Weather:					
	Tonawanda, Ne	w York	Good			Clear, mod. W	/ind, 50F				
Sounding N	Aethod:		Gauge Date	:		Measureme	nt Ref:				
Heron Skinny	y Dipper WLM (P	FC Free)	26-Apr-18	3		IUC Wall Diama	tor (in):				
+3.0'	own (11).		Gauge Tille				ter (iii).				
13.0			1500	1		2	•				
Purge Date:	:				Purge Time:						
26-Apr-18	8				1412	7					
Purge Meth	od:				Field Technic	ian:					
Peristaltic Pu	mp				SS/LM						
				Well V	olume						
A. Well De	pth (ft):		D. Well Vol	ume (ft):		Depth/Height of Top of PVC:					
17.55	5		0.163	3		-0.2					
B. Depth to	Water (ft):		E. Well Volu	ume (gal) C*D)):	Pump Type:					
10.44	4		1.16	5		Peristaltic					
C. Liquid D	Pepth (ft) (A-B):		F. Three We	ll Volumes (ga	al) (E3):	Pump Intake Depth:					
7.12	1		3.48	3		17.5					
					P. (
Time	Tommoratura	aII	OPP	Vater Quality	7 Parameters	DO		Data	Volume		
(hrs)	(°C)	(Stad Unite)		(S/m)	(NITLI)	(mg/I)	(ft btoc)	(I nm)	(litere)		
(113)	()		(1117)	(3/11)	(110)				(inters)		
1419	8.44	7.53	-79	0.905	5.4	0.00	Ŷ	0.30			
1422	8.16	7.54	-84	0.770	13.80	0.00		0.30	0.9		
1425	7.11	7.63	-92	0.581	21.70	0.00		0.30	1.8		
1428	7.21	7.62	-94	0.577	21.30	0.00		0.30	2.7		
1431	7.01	7.69	-104	0.543	14.9	0.00		0.30	3.6		
1434	6.90	7.77	-110	0.517	13.7	0.00		0.30	4.5		
1437	6.91	7.82	-115	0.500	10.90	0.00		0.30	5.4		
1440	6.89	7.89	-127	0.469	6.7	0.00		0.30	6.3		
1443	6.88	8.07	-135	0.468	6.8	0.00		0.30	7.2		
1446	6.86	8.12	-142	0.467	6.7	0.00		0.30	8.1		
1449	6.85	8.12	-144	0.465	6.7	0.00		0.30	9		
	l Quantity of Water Removed (gal):		00 /	9	-	Sampling Ti	ime:	1450	DEG :		
Total Quan	amplers: SS/Li		SS/LM			Split Sample With: Duplicate - PFC			- PFC only		
Total Quan Samplers:			1/06/2016		-	C 1 T					
Total Quan Samplers: Sampling D	Date:		4/26/2018		-	Sample Typ	e:	GW Grab			
Total Quan Samplers: Sampling D COMMEN	Date: FS AND OBSEI	RVATIONS:	4/26/2018	Duplicate for P	FC only here	Sample Typ	e:	GW Grab			

Attachment B

Laboratory Analytical Data

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

May 15, 2018

Nate Kranes EA Engineering, Science & Tech. - NY 6712 Brooklawn Parkway, Suite 104 Syracuse, NY 13211

Project Location: Tonawanda, NY Client Job Number: Project Number: 14907-21 Laboratory Work Order Number: 18D1336

Enclosed are results of analyses for samples received by the laboratory on April 27, 2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Aaron L. Benoit Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

EA Engineering, Science & Tech. - NY 6712 Brooklawn Parkway, Suite 104 Syracuse, NY 13211 ATTN: Nate Kranes

REPORT DATE: 5/15/2018

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 14907-21

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 18D1336

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Tonawanda, NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
915239-MW-01	18D1336-01	Ground Water		SOP 434-PFAAS	
915239-MW-02	18D1336-02	Ground Water		SOP 434-PFAAS	
915239-MW-03	18D1336-03	Ground Water		SOP 434-PFAAS	
915239-MW-05	18D1336-04	Ground Water		SOP 434-PFAAS	
915239-MW-08	18D1336-05	Ground Water		SOP 434-PFAAS	
915239-MW-10	18D1336-06	Ground Water		SOP 434-PFAAS	
915239-MW-DUP	18D1336-07	Ground Water		SOP 434-PFAAS	
915239-FB042618	18D1336-08	Field Blank		SOP 434-PFAAS	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SOP 434-PFAAS

Qualifications:

MS-07

Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated. Analyte & Samples(s) Qualified:

Perfluorooctanesulfonic acid (PFO

B202675-MS1, B202675-MSD1

MS-15

Matrix spike and matrix spike duplicate recoveries are outside of control limits. Data validation is not affected since results for this compound in this sample are "not detected", and recovery bias is on the high side. **Analyte & Samples(s) Qualified:**

6:2 Fluorotelomersulfonate (6:2 FI

B202675-MS1, B202675-MSD1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lua Watthington

Lisa A. Worthington Project Manager



Project Location: Tonawanda, NY Date Received: 4/27/2018 Field Sample #: 915239-MW-01

Sampled: 4/26/2018 11:45

Sample ID: 18D1336-01

Sample Matrix: Ground Water

			Miscellaneous Org	ganic Analys	es				
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	5.9	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorohexanoic acid (PFHxA)	5.5	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluoroheptanoic acid (PFHpA)	6.3	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorobutanoic acid (PFBA)	6.2	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorodecanesulfonic acid (PFDS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluoroheptanesulfonic acid (PFHpS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorooctanesulfonamide (FOSA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluoropentanoic acid (PFPeA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorohexanesulfonic acid (PFHxS)	11	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorooctanoic acid (PFOA)	55	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorooctanesulfonic acid (PFOS)	36	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorononanoic acid (PFNA)	2.1	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
NMeFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
NEtFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:53	KAF
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
13C-PFHxA		94.2	70-130					5/14/18 16:53	
13C-PFDA		109	70-130					5/14/18 16:53	
d5-NEtFOSAA		83.4	70-130					5/14/18 16:53	



Project Location: Tonawanda, NY Date Received: 4/27/2018 Field Sample #: 915239-MW-02

Sample ID: 18D1336-02 Sample Matrix: Ground Water Sampled: 4/26/2018 13:20

			Miscellaneous Org	ganic Analys	es				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorobutanoic acid (PFBA)	3.9	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorodecanesulfonic acid (PFDS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluoroheptanesulfonic acid (PFHpS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorooctanesulfonamide (FOSA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluoropentanoic acid (PFPeA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorooctanoic acid (PFOA)	16	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorooctanesulfonic acid (PFOS)	4.0	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
NMeFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
NEtFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:40	KAF
Surrogates		% Recovery	Recovery Limits	;	Flag/Qual				
13C-PFHxA		88.1	70-130					5/14/18 16:40	
13C-PFDA		97.1	70-130					5/14/18 16:40	
d5-NEtFOSAA		78.2	70-130					5/14/18 16:40	



Project Location: Tonawanda, NY Date Received: 4/27/2018 Field Sample #: 915239-MW-03

Sampled: 4/26/2018 13:22

Sample ID: 18D1336-03

Sample Matrix: Ground Water

			Miscellaneous Org	ganic Analys	es				
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorobutanoic acid (PFBA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorodecanesulfonic acid (PFDS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluoroheptanesulfonic acid (PFHpS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorooctanesulfonamide (FOSA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluoropentanoic acid (PFPeA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
NMeFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
NEtFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:36	KAF
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
13C-PFHxA		127	70-130					5/14/18 15:36	
13C-PFDA		128	70-130					5/14/18 15:36	
d5-NEtFOSAA		129	70-130					5/14/18 15:36	



Project Location: Tonawanda, NY Date Received: 4/27/2018 Field Sample #: 915239-MW-05

Sample ID: 18D1336-04 Sample Matrix: Ground Water Sampled: 4/26/2018 14:42

Miscellaneous Organic Analyses										
							Date Date/Time			
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst	
Perfluorobutanesulfonic acid (PFBS)	2.2	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorohexanoic acid (PFHxA)	4.0	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluoroheptanoic acid (PFHpA)	2.2	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorobutanoic acid (PFBA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorodecanesulfonic acid (PFDS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluoroheptanesulfonic acid (PFHpS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorooctanesulfonamide (FOSA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluoropentanoic acid (PFPeA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorohexanesulfonic acid (PFHxS)	2.7	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorooctanoic acid (PFOA)	22	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorooctanesulfonic acid (PFOS)	4.4	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
NMeFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
NEtFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:02	KAF	
Surrogates		% Recovery	Recovery Limits		Flag/Qual					
13C-PFHxA		102	70-130					5/14/18 16:02		
13C-PFDA		95.9	70-130					5/14/18 16:02		
d5-NEtFOSAA		89.0	70-130					5/14/18 16:02		



Project Location: Tonawanda, NY Date Received: 4/27/2018 Field Sample #: 915239-MW-08

Sampled: 4/26/2018 11:45

Sample ID: 18D1336-05

Sample Matrix: Ground Water

Miscellaneous Organic Analyses										
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst	
Perfluorobutanesulfonic acid (PFBS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorohexanoic acid (PFHxA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluoroheptanoic acid (PFHpA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorobutanoic acid (PFBA)	ND	4.5	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorodecanesulfonic acid (PFDS)	ND	4.5	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.5	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorooctanesulfonamide (FOSA)	ND	4.5	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluoropentanoic acid (PFPeA)	ND	4.5	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	4.5	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	4.5	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorohexanesulfonic acid (PFHxS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorooctanoic acid (PFOA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorooctanesulfonic acid (PFOS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorononanoic acid (PFNA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorodecanoic acid (PFDA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
NMeFOSAA	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluoroundecanoic acid (PFUnA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
NEtFOSAA	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorododecanoic acid (PFDoA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorotridecanoic acid (PFTrDA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Perfluorotetradecanoic acid (PFTA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:49	KAF	
Surrogates		% Recovery	Recovery Limits	6	Flag/Qual					
13C-PFHxA		92.5	70-130					5/14/18 15:49		
13C-PFDA		85.5	70-130					5/14/18 15:49		
d5-NEtFOSAA		77.1	70-130					5/14/18 15:49		



Project Location: Tonawanda, NY Date Received: 4/27/2018

ND

2.0

Field Sample #: 915239-MW-10

Perfluorotridecanoic acid (PFTrDA)

Sample ID: 18D1336-06

Sampled: 4/26/2018 14:50

Sample Matrix: Ground Water									
Miscellaneous Organic Analyses									
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorobutanoic acid (PFBA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorodecanesulfonic acid (PFDS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluoroheptanesulfonic acid (PFHpS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorooctanesulfonamide (FOSA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluoropentanoic acid (PFPeA)	5.0	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorooctanoic acid (PFOA)	7.0	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
NMeFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
NEtFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF

Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 16:27	KAF
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
13C-PFHxA		101	70-130					5/14/18 16:27	
13C-PFDA		104	70-130					5/14/18 16:27	
d5-NEtFOSAA		91.9	70-130					5/14/18 16:27	

ng/L

1

SOP 434-PFAAS

5/10/18

5/14/18 16:27

KAF


39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332 Sample Description:

Project Location: Tonawanda, NY Date Received: 4/27/2018 Field Sample #: 915239-MW-DUP

Sampled: 4/26/2018 00:00

Sample ID: 18D1336-07 Sample Matrix: Ground Water

Miscellaneous Organic Analyses Date Date/Time Results RL Units Dilution Flag/Qual Method Prepared Analyzed Analyte Analyst Perfluorobutanesulfonic acid (PFBS) ND 2.0 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 ng/L KAF Perfluorohexanoic acid (PFHxA) ND 2.0 ng/L 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF Perfluoroheptanoic acid (PFHpA) SOP 434-PFAAS 5/10/18 ND 2.0 ng/L 1 5/14/18 16:15 KAF Perfluorobutanoic acid (PFBA) ND 3.0 ng/L SOP 434-PFAAS 5/10/18 5/14/18 16:15 1 KAF Perfluorodecanesulfonic acid (PFDS) ND SOP 434-PFAAS 5/10/18 3.0 1 5/14/18 16:15 ng/L KAF Perfluoroheptanesulfonic acid (PFHpS) ND SOP 434-PFAAS 5/10/18 5/14/18 16:15 3.0 KAF ng/L 1 Perfluorooctanesulfonamide (FOSA) ND 3.0 ng/L 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF Perfluoropentanoic acid (PFPeA) SOP 434-PFAAS ND 3.0 ng/L 1 5/10/18 5/14/18 16:15 KAF 6:2 Fluorotelomersulfonate (6:2 FTS) ND 3.0 ng/L 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF 8:2 Fluorotelomersulfonate (8:2 FTS) ND 3.0 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF ng/L 1 Perfluorohexanesulfonic acid (PFHxS) ND 2.0 ng/L 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF Perfluorooctanoic acid (PFOA) 6.9 2.0 SOP 434-PFAAS 5/10/18 5/14/18 16:15 ng/L 1 KAF Perfluorooctanesulfonic acid (PFOS) 2.2 SOP 434-PFAAS 5/10/18 5/14/18 16:15 2.0 ng/L 1 KAF Perfluorononanoic acid (PFNA) ng/L SOP 434-PFAAS ND 2.0 1 5/10/18 5/14/18 16:15 KAF Perfluorodecanoic acid (PFDA) ND 2.0 ng/L SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF 1 NMeFOSAA ND 2.0 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF ng/L 1 Perfluoroundecanoic acid (PFUnA) ND SOP 434-PFAAS 5/10/18 5/14/18 16:15 2.0 ng/L 1 KAF **NEtFOSAA** ND 2.0 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 ng/L KAF Perfluorododecanoic acid (PFDoA) ND 2.0 ng/L 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF Perfluorotridecanoic acid (PFTrDA) SOP 434-PFAAS ND 2.0 ng/L 1 5/10/18 5/14/18 16:15 KAF Perfluorotetradecanoic acid (PFTA) ND 2.0 ng/L 1 SOP 434-PFAAS 5/10/18 5/14/18 16:15 KAF % Recovery Surrogates **Recovery Limits** Flag/Qual 13C-PFHxA 106 70-130 5/14/18 16:15 13C-PFDA 70-130 99.5 5/14/18 16:15 d5-NEtFOSAA 74.3 70-130 5/14/18 16:15

Work Order: 18D1336



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332 Sample Description:

Project Location: Tonawanda, NY Date Received: 4/27/2018 Field Sample #: 915239-FB042618

Sampled: 4/26/2018 15:00

Sample ID: 18D1336-08 Sample Matrix: Field Blank

			Miscellaneous Org	ganic Analys	es				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorobutanoic acid (PFBA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorodecanesulfonic acid (PFDS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluoroheptanesulfonic acid (PFHpS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorooctanesulfonamide (FOSA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluoropentanoic acid (PFPeA)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	3.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
NMeFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
NEtFOSAA	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP 434-PFAAS	5/10/18	5/14/18 15:24	KAF
Surrogates		% Recovery	Recovery Limits	;	Flag/Qual				
13C-PFHxA		105	70-130					5/14/18 15:24	
13C-PFDA		89.1	70-130					5/14/18 15:24	
d5-NEtFOSAA		91.9	70-130					5/14/18 15:24	

Work Order: 18D1336



Sample Extraction Data

Prep Method: EPA 537-SOP 434-PFAAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
18D1336-01 [915239-MW-01]	B202675	250	1.00	05/10/18
18D1336-02 [915239-MW-02]	B202675	250	1.00	05/10/18
18D1336-03 [915239-MW-03]	B202675	250	1.00	05/10/18
18D1336-04 [915239-MW-05]	B202675	250	1.00	05/10/18
18D1336-05 [915239-MW-08]	B202675	166	1.00	05/10/18
18D1336-06 [915239-MW-10]	B202675	250	1.00	05/10/18
18D1336-07 [915239-MW-DUP]	B202675	250	1.00	05/10/18
18D1336-08 [915239-FB042618]	B202675	250	1.00	05/10/18



QUALITY CONTROL

Miscellaneous Organic Analyses - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B202675 - EPA 537										
Blank (B202675-BLK1)				Prepared: 05/	/10/18 Analy	zed: 05/14/1	8			
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorobutanoic acid (PFBA)	ND	3.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	3.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	3.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	3.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	3.0	ng/L							
6:2 Fluorotelomersulfonate (6:2 FTS)	ND	3.0	ng/L							
8:2 Fluorotelomersulfonate (8:2 FTS)	ND	3.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
NMeFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
NEtFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	43.8		ng/L	40.0		109	70-130			
Surrogate: 13C-PFDA	38.1		ng/L	40.0		95.2	70-130			
Surrogate: d5-NEtFOSAA	113		ng/L	160		70.8	70-130			
LCS (B202675-BS1)				Prepared: 05/	/10/18 Analy	zed: 05/14/1	8			
Perfluorobutanesulfonic acid (PFBS)	1.84	2.0	ng/L	1.77		104	50-150			
Perfluorohexanoic acid (PFHxA)	2.58	2.0	ng/L	2.00		129	50-150			
Perfluoroheptanoic acid (PFHpA)	2.25	2.0	ng/L	2.00		113	50-150			
Perfluorobutanoic acid (PFBA)	1.35	3.0	ng/L	2.00		67.4	30-110			
Perfluorodecanesulfonic acid (PFDS)	1.58	3.0	ng/L	1.93		81.7	50-150			
Perfluoroheptanesulfonic acid (PFHpS)	2.22	3.0	ng/L	1.90		117	50-150			
Perfluorooctanesulfonamide (FOSA)	1.03	3.0	ng/L	2.00		51.3	30-110			
Perfluoropentanoic acid (PFPeA)	1.86	3.0	ng/L	2.00		93.0	50-150			
6:2 Fluorotelomersulfonate (6:2 FTS)	2.71	3.0	ng/L	1.90		143	50-150			
8:2 Fluorotelomersulfonate (8:2 FTS)	2.86	3.0	ng/L	1.92		149	50-150			
Perfluorohexanesulfonic acid (PFHxS)	2.25	2.0	ng/L	1.82		123	50-150			
Perfluorooctanoic acid (PFOA)	2.45	2.0	ng/L	2.00		123	50-150			
Perfluorooctanesulfonic acid (PFOS)	2.50	2.0	ng/L	1.85		135	50-150			
Perfluorononanoic acid (PFNA)	2.58	2.0	ng/L	2.00		129	50-150			
Perfluorodecanoic acid (PFDA)	2.48	2.0	ng/L	2.00		124	50-150			
NMeFOSAA	2.35	2.0	ng/L	2.00		118	50-150			
Perfluoroundecanoic acid (PFUnA)	1.81	2.0	ng/L	2.00		90.4	50-150			
NEtFOSAA	1.96	2.0	ng/L	2.00		98.1	50-150			
Perfluorododecanoic acid (PFDoA)	1.91	2.0	ng/L	2.00		95.4	50-150			
Perfluorotridecanoic acid (PFTrDA)	2.02	2.0	ng/L	2.00		101	50-150			
Perfluorotetradecanoic acid (PFTA)	1.68	2.0	ng/L	2.00		84.0	50-150			
Surrogate: 13C-PFHxA	47.9		ng/L	40.0		120	70-130			
Surrogate: 13C-PFDA	45.3		ng/L	40.0		113	70-130			
Surrogate: d5-NEtFOSAA	154		ng/L	160		96.4	70-130			



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332 QUALITY CONTROL

Miscellaneous Organic Analyses - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B202675 - EPA 537										
Matrix Spike (B202675-MS1)	Sourc	Source: 18D1336-01			5/10/18 Analy	zed: 05/14	/18			
Perfluorobutanesulfonic acid (PFBS)	7.92	2.0	ng/L	1.77	5.87	116	50-150			
Perfluorohexanoic acid (PFHxA)	8.25	2.0	ng/L	2.00	5.46	139	50-150			
Perfluoroheptanoic acid (PFHpA)	8.55	2.0	ng/L	2.00	6.29	113	50-150			
Perfluorobutanoic acid (PFBA)	8.03	3.0	ng/L	2.00	6.18	92.2	30-110			
Perfluorodecanesulfonic acid (PFDS)	1.91	3.0	ng/L	1.93	ND	98.9	50-150			
Perfluoroheptanesulfonic acid (PFHpS)	2.48	3.0	ng/L	1.90	1.10	73.1	50-150			
Perfluorooctanesulfonamide (FOSA)	0.724	3.0	ng/L	2.00	ND	36.2	30-110			
Perfluoropentanoic acid (PFPeA)	5.16	3.0	ng/L	2.00	2.80	118	50-150			
6:2 Fluorotelomersulfonate (6:2 FTS)	7.74	3.0	ng/L	1.90	ND	407	* 50-150			MS-15
8:2 Fluorotelomersulfonate (8:2 FTS)	3.35	3.0	ng/L	1.92	1.24	110	50-150			
Perfluorohexanesulfonic acid (PFHxS)	12.0	2.0	ng/L	1.82	10.6	76.8	50-150			
Perfluorooctanoic acid (PFOA)	57.0	2.0	ng/L	2.00	55.3	85.5	50-150			
Perfluorooctanesulfonic acid (PFOS)	31.5	2.0	ng/L	1.85	36.3	-260	* 50-150			MS-07
Perfluorononanoic acid (PFNA)	3.80	2.0	ng/L	2.00	2.05	87.5	50-150			
Perfluorodecanoic acid (PFDA)	2.71	2.0	ng/L	2.00	ND	136	50-150			
NMeFOSAA	1.49	2.0	ng/L	2.00	ND	74.5	50-150			
Perfluoroundecanoic acid (PFUnA)	2.44	2.0	ng/L	2.00	ND	122	50-150			
NEtFOSAA	2.55	2.0	ng/L	2.00	ND	127	50-150			
Perfluorododecanoic acid (PFDoA)	1.68	2.0	ng/L	2.00	ND	83.9	50-150			
Perfluorotridecanoic acid (PFTrDA)	2.26	2.0	ng/L	2.00	ND	113	50-150			
Perfluorotetradecanoic acid (PFTA)	2.29	2.0	ng/L	2.00	ND	114	50-150			
Surrogate: 13C-PFHxA	35.7		ng/L	40.0		89.3	70-130			
Surrogate: 13C-PFDA	49.5		ng/L	40.0		124	70-130			
Surrogate: d5-NEtFOSAA	133		ng/L	160		83.1	70-130			
Matrix Spike Dup (B202675-MSD1)	Sourc	e: 18D1336-	01	Prepared: 05	5/10/18 Analy	zed: 05/14	/18			
Perfluorobutanesulfonic acid (PFBS)	8.24	2.0	ng/L	1.77	5.87	134	50-150	3.95	30	
Perfluorohexanoic acid (PFHxA)	7.36	2.0	ng/L	2.00	5.46	94.8	50-150	11.4	30	
Perfluoroheptanoic acid (PFHpA)	8.20	2.0	ng/L	2.00	6.29	95.5	50-150	4.12	30	
Perfluorobutanoic acid (PFBA)	8.28	3.0	ng/L	2.00	6.18	105	30-110	3.07	30	
Perfluorodecanesulfonic acid (PFDS)	1.79	3.0	ng/L	1.93	ND	92.9	50-150	6.26	30	
Perfluoroheptanesulfonic acid (PFHpS)	2.68	3.0	ng/L	1.90	1.10	83.4	50-150	7.57	30	
Perfluorooctanesulfonamide (FOSA)	0.768	3.0	ng/L	2.00	ND	38.4	30-110	5.96	30	
Perfluoropentanoic acid (PFPeA)	5.25	3.0	ng/L	2.00	2.80	123	50-150	1.83	30	
6:2 Fluorotelomersulfonate (6:2 FTS)	5.79	3.0	ng/L	1.90	ND	305	* 50-150	28.7	30	MS-15
8:2 Fluorotelomersulfonate (8:2 FTS)	3.27	3.0	ng/L	1.92	1.24	106	50-150	2.36	30	
Perfluorohexanesulfonic acid (PFHxS)	12.1	2.0	ng/L	1.82	10.6	81.7	50-150	0.747	30	
Perfluorooctanoic acid (PFOA)	57.1	2.0	ng/L	2.00	55.3	90.3	50-150	0.169	30	
Perfluorooctanesulfonic acid (PFOS)	36.5	2.0	ng/L	1.85	36.3	10.8	* 50-150	14.7	30	MS-07
Perfluorononanoic acid (PFNA)	3.61	2.0	ng/L	2.00	2.05	77.9	50-150	5.19	30	

ng/L

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ND 134

ND 96.4

ND 110

ND 109

ND 77.5

ND 84.3

ND 101

75.8

106

86.0

50-150

50-150

50-150

50-150

50-150

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50-150

50-150

70-130

70-130

70-130

5.19

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15.6

7.85

28.9

12.0

30

30

30

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30

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3.61

2.67

1.93

2.20

2.18

1.55

1.69

2.03

30.3

42.5

138

Perfluorodecanoic acid (PFDA)

Perfluoroundecanoic acid (PFUnA)

Perfluorododecanoic acid (PFDoA)

Perfluorotridecanoic acid (PFTrDA)

Perfluorotetradecanoic acid (PFTA)

Surrogate: 13C-PFHxA

Surrogate: 13C-PFDA

Surrogate: d5-NEtFOSAA

NMeFOSAA

NEtFOSAA



FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
Ť	Wide recovery limits established for difficult compound.
\$	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
MS-07	Matrix spike recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery.Possibility of sample matrix effects that lead to low bias for reported result or non-homogeneous sample aliquot cannot be eliminated.
MS-15	Matrix spike and matrix spike duplicate recoveries are outside of control limits. Data validation is not affected since results for this compound in this sample are "not detected", and recovery bias is on the high side.



CERTIFICATIONS

Certified Analyses included in this Report

Analyte

Certifications

No certified Analyses included in this Report

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2018
СТ	Connecticut Department of Publilc Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2019
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2019
RI	Rhode Island Department of Health	LAO00112	12/30/2018
NC	North Carolina Div. of Water Quality	652	12/31/2018
NJ	New Jersey DEP	MA007 NELAP	06/30/2018
FL	Florida Department of Health	E871027 NELAP	06/30/2018
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2018
ME	State of Maine	2011028	06/9/2019
VA	Commonwealth of Virginia	460217	12/14/2018
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2018
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2018
NC-DW	North Carolina Department of Health	25703	07/31/2018

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IMPORTANT! FedEx is closely monitoring the winter storms across portions of the U.S. <u>Learn More</u> FedEx [©] Tracking 780712435119 Ship date: Actual delivery:

Thu 4/26/2018 Syracuse, NY US



Actual delivery	,
Fri 4/27/2018	9:35 am
EAST LONGM	EADOW, MA US

Travel History

▲ Date/Time	Activity	Location
⊯ 4/27/2018 -	Friday	
9:35 am	Delivered	EAST LONGINEADOW, MA
7:52 am	On FedEx vehicle for delivery	WINDSOR LOCKS CT
7:40 am	At local FedEx facility	WINDSOR LOCKS CT
6:31 am	At destination sort facility	EAST GRANBY CT
3:22 am	Departed FedEx location	MEMPHIS TN
= 4/26/2018 -	Thursday	
10:57 pm	Arrived at FedEx location	MEMPHIS, TN
7: 1 9 pm	Picked up	CHEEKTOWAGA 10
6:25 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking Number	780712435119	Service	FedEx Priority Overnight			
Weight	25 lbs / 11.34 kgs	Dimensions	16x11x12 in.			
Delivered To	Shipping/Receiving	Total pieces	1			
Total shipment weig	ht = 25 lbs / 11.34 kgs	Terms	Recipient			
Packaging	Your Packaging	Special handling	Deliver Weekday, Additional			
Standard 🥡	4/27/2018 by 10:30 am	section	Handling Surcharge			

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Doc# 277 Rev 5 2017 Login Sample Receipt Checklist - (Rejection Orteria Listing - Using Acceptance Policy) Any Felse Statement will be brought to the attention of the Client - State True or False Client										SC.®
Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False Client FA		*****					Doc# 2	77 Rev 5 201	7	
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onments.	Sommonto:		Perchiorate		Ziploc	k				



May 3, 2018

Nate Kranes EA Engineering, Science & Tech. - NY 6712 Brooklawn Parkway, Suite 104 Syracuse, NY 13211

Project Location: Tonawanda,NY Client Job Number: Project Number: 14907-21 Laboratory Work Order Number: 18D1337

Enclosed are results of analyses for samples received by the laboratory on April 27, 2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Aaron L. Benoit Project Manager

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EA Engineering, Science & Tech. - NY 6712 Brooklawn Parkway, Suite 104 Syracuse, NY 13211 ATTN: Nate Kranes

REPORT DATE: 5/3/2018

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 14907-21

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 18D1337

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Tonawanda,NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
915236-MW-01	18D1337-01	Ground Water		SW-846 8270D	
915236-MW-02	18D1337-02	Ground Water		SW-846 8270D	
915236-MW-03	18D1337-03	Ground Water		SW-846 8270D	
915236-MW-05	18D1337-04	Ground Water		SW-846 8270D	
915236-MW-08	18D1337-05	Ground Water		SW-846 8270D	
915236-MW-10	18D1337-06	Ground Water		SW-846 8270D	
915236-MW-DUP	18D1337-07	Ground Water		SW-846 8270D	
915236-MW-FB042818	18D1337-08	Field Blank		SW-846 8270D	



CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

fra Watshington

Lisa A. Worthington Project Manager

5/2/18 16:15



Surrogates

1,4-Dioxane-d8

	39 Spruce 3		ongmeadow, MA u	1020 FAX 4	13/323-0405 IE	EL. 413/525-2352			
Project Location: Tonawanda,NY	Sa	ample Descript	ion:				Work Ord	er: 18D1337	
Date Received: 4/27/2018									
Field Sample #: 915236-MW-01	Sa	ampled: 4/26/2	2018 11:45						
Sample ID: 18D1337-01									
Sample Matrix: Ground Water									
			1,4-Dioxane by isoto	ope dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1 4 Diamana	ND	0.20		1		SW 846 8270D	£/1/10	5/0/10 16.15	n m

Flag/Qual

Recovery Limits

15-110

% Recovery



Surrogates

1,4-Dioxane-d8

	39 Spruce 3		Longineadow, MA 0	1020 FAX 4	13/323-0403 16	EL. 415/525-2552			
Project Location: Tonawanda,NY	Sa	ample Descrip	tion:				Work Ord	er: 18D1337	
Date Received: 4/27/2018									
Field Sample #: 915236-MW-02	Sa	ampled: 4/26	2018 13:20						
Sample ID: 18D1337-02									
Sample Matrix: Ground Water									
			1,4-Dioxane by isoto	pe dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1.4 Diovane	ND	0.20	ug/I	1		SW-846 8270D	5/1/18	5/2/18 16:35	IMP

Flag/Qual

Recovery Limits

15-110

% Recovery

26.1

5/2/18 16:35



Surrogates

1,4-Dioxane-d8

	39 Spruce S	Street * Ea	st Longmeadow, MA (01028 * FAX 4	13/525-6405 * TE	EL. 413/525-2332			
Project Location: Tonawanda,NY	S	ample Desc	ription:				Work Ord	er: 18D1337	
Date Received: 4/27/2018									
Field Sample #: 915236-MW-03	S	ampled: 4/2	26/2018 13:22						
Sample ID: 18D1337-03									
Sample Matrix: Ground Water									
			1,4-Dioxane by isot	ope dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1,4-Dioxane	ND	0.20	μg/L	1		SW-846 8270D	5/1/18	5/2/18 16:56	IMR

Flag/Qual

Recovery Limits

15-110

% Recovery

25.8

5/2/18 16:56

5/2/18 17:16



Surrogates

1,4-Dioxane-d8

	Ja Spince S			1020 1 47 4	13/323-0403 11	L. 415/525-2552			
Project Location: Tonawanda,NY	Sa	imple Descri	otion:				Work Ord	er: 18D1337	
Date Received: 4/27/2018									
Field Sample #: 915236-MW-05	Sa	ampled: 4/26	2018 14:42						
Sample ID: 18D1337-04									
Sample Matrix: Ground Water									
			1,4-Dioxane by isoto	ope dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1 4 Diavana	ND	0.20	ug/I	1		SW 846 8270D	5/1/19	5/2/18 17.16	IMP

Flag/Qual

Recovery Limits

15-110

% Recovery

5/3/18 9:13



Surrogates

1,4-Dioxane-d8

Project Location: Tonowanda NV	50 Sp. 200 S	mala Docariati					Work Ord	m 19D1227	
Floject Location. Tonawanda, NT	50	ample Description	011.				WORK OT	1. 16D1557	
Date Received: 4/27/2018									
Field Sample #: 915236-MW-08	S	ampled: 4/26/20	018 11:45						
Sample ID: 18D1337-05									
Sample Matrix: Ground Water									
		1	1,4-Dioxane by isot	ope dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst

Flag/Qual

Recovery Limits

15-110

% Recovery

5/3/18 9:33



Surrogates

1,4-Dioxane-d8

	39 Spruce S	treet * Ea	st Longmeadow, MA U	1028 ° FAX 4	13/525-6405 ° TE	L. 413/525-2332			
Project Location: Tonawanda,NY	Sa	imple Desc	ription:				Work Orde	er: 18D1337	
Date Received: 4/27/2018									
Field Sample #: 915236-MW-10	Sa	ampled: 4/2	26/2018 14:50						
Sample ID: 18D1337-06									
Sample Matrix: Ground Water									
			1,4-Dioxane by isoto	ope dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1,4-Dioxane	4.3	0.20	μg/L	1		SW-846 8270D	5/1/18	5/3/18 9:33	IMR

Flag/Qual

Recovery Limits

15-110

% Recovery

5/3/18 9:53



Surrogates

1,4-Dioxane-d8

Project Location: Tonawanda NY	Se	ample Descript	ion:				Work Orde	er: 18D1337	
Date Received: 4/27/2018	50	ample Descript					work of de	. 1001337	
Field Sample #: 915236-MW-DUP	Sa	ampled: 4/26/2	2018 00:00						
Sample ID: 18D1337-07									
Sample Matrix: Ground Water									
			1,4-Dioxane by isoto	ope dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1.4 Diaman	ND	0.04	1	1		SW 94(9270D	5/1/10	5/2/10 0.52	n m

Flag/Qual

Recovery Limits

15-110

% Recovery



Surrogates

1,4-Dioxane-d8

	39 Spruce S	street * Ea	st Longmeadow, MA	01028 * FAX 4	13/525-6405 * 11	=L. 413/525-2332			
Project Location: Tonawanda,NY	Sa	ample Desc	ription:				Work Orde	er: 18D1337	
Date Received: 4/27/2018									
Field Sample #: 915236-MW-FB042818	Sa	ampled: 4/2	26/2018 15:00						
Sample ID: 18D1337-08									
Sample Matrix: Field Blank									
			1,4-Dioxane by isot	tope dilution G	C/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1,4-Dioxane	ND	0.20	μg/L	1		SW-846 8270D	5/1/18	5/3/18 10:13	IMR

Flag/Qual

Recovery Limits

15-110

% Recovery



Sample Extraction Data

Prep Method: SW-846 3510C-SW-846 8270D

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
18D1337-01 [915236-MW-01]	B202214	1000	1.00	05/01/18
18D1337-02 [915236-MW-02]	B202214	1000	1.00	05/01/18
18D1337-03 [915236-MW-03]	B202214	1000	1.00	05/01/18
18D1337-04 [915236-MW-05]	B202214	1000	1.00	05/01/18
18D1337-05 [915236-MW-08]	B202214	720	1.00	05/01/18
18D1337-06 [915236-MW-10]	B202214	1000	1.00	05/01/18
18D1337-07 [915236-MW-DUP]	B202214	840	1.00	05/01/18
18D1337-08 [915236-MW-FB042818]	B202214	1000	1.00	05/01/18



QUALITY CONTROL

1,4-Dioxane by isotope dilution GC/MS - Quality Control

Analyte	Result	Reporting	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
/ mary to	result	Luilit	Onto	Level	Result	JURLE	Linnts	KI D	Linn	110105
Batch B202214 - SW-846 3510C										
Blank (B202214-BLK1)				Prepared: 05	5/01/18 Anal	yzed: 05/02	/18			
1,4-Dioxane	ND	0.20	μg/L							
Surrogate: 1,4-Dioxane-d8	3.62		μg/L	10.0		36.2	15-110			
LCS (B202214-BS1)				Prepared: 05	5/01/18 Anal	yzed: 05/02	/18			
1,4-Dioxane	12.6	0.20	μg/L	10.0		126	40-140			
Surrogate: 1,4-Dioxane-d8	2.27		μg/L	10.0		22.7	15-110			
LCS Dup (B202214-BSD1)				Prepared: 05	5/01/18 Anal	yzed: 05/02	/18			
1,4-Dioxane	12.6	0.20	μg/L	10.0		126	40-140	0.302	30	
Surrogate: 1,4-Dioxane-d8	2.46		μg/L	10.0		24.6	15-110			
Matrix Spike (B202214-MS1)	Sou	rce: 18D1337-	-01	Prepared: 05	5/01/18 Anal	yzed: 05/02	/18			
1,4-Dioxane	10.6	0.20	μg/L	10.0	NE) 106	40-140			
Surrogate: 1,4-Dioxane-d8	2.94		μg/L	10.0		29.4	15-110			
Matrix Spike Dup (B202214-MSD1)	Sou	rce: 18D1337-	-01	Prepared: 05	5/01/18 Anal	yzed: 05/02	/18			
1,4-Dioxane	11.6	0.20	μg/L	10.0	NE	0 116	40-140	8.48	20	
Surrogate: 1,4-Dioxane-d8	2.39		μg/L	10.0		23.9	15-110			



FLAG/QUALIFIER SUMMARY

- * QC result is outside of established limits.
- † Wide recovery limits established for difficult compound.
- Wide RPD limits established for difficult compound.
- # Data exceeded client recommended or regulatory level
- ND Not Detected
- RL Reporting Limit is at the level of quantitation (LOQ)
- DL Detection Limit is the lower limit of detection determined by the MDL study
- MCL Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.



CERTIFICATIONS

Certified Analyses included in this Report

1,4-Dioxane

Certifications

SW-846 8270D in Water

NY

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2018
СТ	Connecticut Department of Publilc Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2019
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2019
RI	Rhode Island Department of Health	LAO00112	12/30/2018
NC	North Carolina Div. of Water Quality	652	12/31/2018
NJ	New Jersey DEP	MA007 NELAP	06/30/2018
FL	Florida Department of Health	E871027 NELAP	06/30/2018
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2018
ME	State of Maine	2011028	06/9/2019
VA	Commonwealth of Virginia	460217	12/14/2018
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2018
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2018
NC-DW	North Carolina Department of Health	25703	07/31/2018

. r		http://www.contestlabs.com Doc.	# 380 Rev 1_03242017	مر ۲
	hdne: 413-525-2332	CHAIN OF CUSTODY RECORD (New York)	39 Spruce Street East London MA 01038	Page of
IIIIII ANALYTICAAL LABORATORY	ax: 413-525-6405	Requested Turnaround Time		
9	imail: info@contestlabs.com	7-Day 🔲 10-Day 🛄	30	# of Containers
Company Name: EA 1	ENGINEERING	Due Date: STAM bAKD		² Preservation Code 🛨
Address: 67 Q BROOKLAWN P.	HWY. STE 101, SYRAGUE NY	Rush-Approval Required	A A A A A A A A A A A A A A A A A A A	³ Container Code
Phone: 315 431 4610	. (3×11	1-Day 🔲 3-Day 🗍	analysis requested	Dissolved Metals Samples
Project Name: 5565	FRIVER RUAD	2-Day 4-Day	О <u>н</u> он	Field Filtered
Project Location. ToN ANANAA, N	2	Bata Belivery	134	Lab to Filter
Project Number: 49 0 2 21	-		B. A.	
Project Manager: Bor CASEY		Other: Fuce (AT D/Rayus)	£ 3	Orthophusphate Struples
Turvire Beriniant NAP-UCAC+AP	A EACT (AM		~~~~	
Sampled By Strepten Se ones	a cress. with	Fax To #:	×01	
Con-Test Conerter Work Order#	int Sample ID / Description Date/Time	Ending 2577.027 Grab Matrix Conc 14 Date/Time Gomperite Grab Code Code A	1 + 1	1 Martific Codes:
2516 1	136-M[N-01 01261	a 1145 6 x GW	7	WW = Wate Water DW = Debite Water
2 915	1, 20-MM-22C	1 12 E QEEI		A- M-
2 915:	236 - MW - 03	K (75)		SL= Sludge SOL= Solid
4 91S	386-MW-05	(t+t+)		O = Other (please define)
esib >	136 - MM - 08	Kanta a		•
6 9152	236 - MW-10	1450 2		² Preservation Codes: 1 = lced
1 915 i	236 - MW - DUP	0		H = HCL M = Methanol
8 915	236 - MU. FB042618	LISOO 2 LL		N = Nitric Acid S = Sulfuric Acid
TOWNA	UPUA			B = Sodium Bisulfate X = Sodium Hvdroxide
				T = Sodium Thiosulfate
Comments: PFA ON SEPARATI	E CHAIN. ms/ms	5D @ MW-01 Please use the follo	owing codes to indicate possible sample concentration	0 = Other (please define)
2 IL AMBER PER	k Strapce M	м 28 - 1145 Н - High: M	within the Conc Code column above: 1 - Medium; L - Low; C - Clean; U - Unknown	³ Container Codes:
Relinquished by: (signature)	Date/Time:	Program & Regulatory, Information	Beliverables	A = Amber Glass G = Glass D = Dlattio
Et 1/) TEPHEN DLONER / S	A Date/Time:	AWQ STDS UNY TOGS NYC Sewer Discharge NY CP-51		ge r = 1 maue ST = Sterile 00 v = Vial
Relinquished by: (signature)	√ 2/1 (1, 1, 5, 5, 1) Date/Time:	Part 360 GW (Landfill) NY Restricted Use	EQUIS (Standard) EI NY Regulatory EI	00 S = Summa Canister 00 T = Tedlar Bag
F D ved by: (signature)	Date/Time:	NY Unrestricted Use NY Part 375	Other Only EF	
ige	- ANNO		WELAC and AIHA-LAP, LLC Accredited	
I D dustate by (signature)	Date/Time: Project E	ntity Government Municipality M	WRA WRTA Other Chromatogram	
1 G ved by: (signature)	Date/Time:	Federal 21 J Sc City Brownfield N	ABTA (NYSDEC) AHA-LAP, LLC	Non Soxhlet



IMPORTANT! FedEx is closely monitoring the winter storms across portions of the U.S. Learn More



806832457681 Service **Tracking Number** Dimensions 24x14x14 in. Terms Total pieces 1 Your Packaging Packaging

4/27/2018 by 10:30 am

Delivered To Special handling section

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LANGUAGE

Ask FedEx

and the second								
					Doc# 27	7 Rev 5 201	7	
Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False								
Statem	ent will be broug	ght to the at	tention of	the Client	- State True	or False		
Client EA	Ensinee	0ry						
Received By	pap	0	Date	42	<u>118</u>	Time	935	
How were the samples	in Cooler	T	No Cooler	,	On Ice	- <u>(</u> -	No Ice	
received?	Direct from Samo	lina			- Ambient		Melted Ice	
	Billott in old in ording	By Gup #	5-77		Actual Tem	n- 3.9	ſΥ.L.	
Were samples within	T				Actual Tam	<u>e</u>	<u> </u>	
Temperature? 2-6°C		By Blank #		0	Actual Tem	<u>p -</u>	A	
Was Custody Seal Intact? <u>A</u> Were Samples Tampered with? <u>A</u>								
Was COC Reline	quished ?	T	D0es	s Unain Ag ட	ree with Sar	npies :	t	
Are there broken/le	aking/loose caps	on any sam				olding time?		
Is COC in ink/ Legible?	Client	-	Analysis		Samol	or Name		
DIG COC Include all	Broject		ID's	<u>I</u>	- Collection	Dates/Times	τ <u>,</u>	
Are Completebols filled	out and logible?	<u> </u>)				
Are sample labels med	out and legible :			Who wa	s notified?			
Are there Rushes?		F		Who wa	s notified?			
Are there Short Holds?		<u> </u>		Who wa	s notified?			
Is there enough Volume	?	τ			N.			
Is there Headsnace whe	re applicable?	F		MS/MSD?	hart .	T	<u>^</u>	
Proper Media/Containers	s Used?	Т		Is splitting	samples req	uired?	F	
Were trip blanks receive	d?	F.		On COC?	F			
Do all samples have the	proper pH?	NA	Acid			Base		
Viale #	Coptainers	1011			#			#
Unn-	1 Liter Amb.		1 Liter	Plastic		16 oz	z Amb.	
HCL-	500 mL Amb.		500 mL	Plastic		8oz An	nb/Clear	
Meoh-	250 mL Amb.		250 mL	Plastic		4oz An	nb/Clear	
Bisulfate-	Col./Bacteria		Flash	point		2oz An	nb/Clear	
DI-	Other Plastic		Other	Glass		<u> </u>	core	
Thiosulfate-	SOC Kit		Plasti	c Bag		Frozen:		
Sulfuric-	Perchlorate		Zipl	ock	<u> </u>			
			Unused I	Media				
Vials #	Containers:	#			#			#
Unp-	1 Liter Amb.		1 Liter	Plastic		16 02	z Amb.	
HCL-	500 mL Amb.		500 mL	Plastic		8oz An	nb/Clear	
Meoh-	250 mL Amb.		250 mL	Plastic		4oz An	nb/Clear	
Bisulfate-	Col./Bacteria		Flash	point		ZOZ AN	nd/Clear	
DI-	Other Plastic		Other	Glass		En	core	
I hiosultate-	Boroblorato		7iasti Zial	c bay		1102611.		
Suiruric-	Ferchiorate			OUK		I		
Samples received in 2 cours. One of the ambers for sample MW-03 was received broken.								
Sumple labels have 915239; doesn't match loc.								

Attachment C

Final Data Validation Report



DATA VALIDATION REPORT

5565 River Road

Per-fluorinated Compounds, and 1,4-Dioxane SDGs 18D1336 and 18D1337

Chemical Analyses Performed by:

Con-Test Analytical Laboratory

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

EA Engineering, Science and Technology, Inc.

Report Released

July 25, 2018

5 Brilliant Avenue, Pittsburgh, PA 15215 412.408.3288 I www.eds-pa.com



DATA VALIDATION REPORT FOR PER-FLUORINATED COMPOUNDS

SITE: 5565 River Road

LABORATORY: Con-Test Analytical Laboratory

SAMPLE DELIVERY GROUP: 18D1336

MATRIX: Water

VALIDATION LEVEL: 4

This sample delivery group consists of the following samples:

915239-MW-01	915239-MW-08
915239-MW-02	915239-MW-10
915239-MW-03	915239-MW-DUP
915239-MW-05	915239-FB042618

The samples described above were analyzed via USEPA 537 to determine concentrations of selected per-fluorinated alkyl acids (PFAAs), perfluorooctanoic acids (PFOA), and perfluorooctyl sulfonates (PFOS).

Performance criteria specified in the analytical method, USEPA 537, Determination of Selected Per-fluorinated Alkyl Acids (PFAAs) in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS), Version 1.1, September 2009; as well as the USEPA National Functional Guidelines for Organic Superfund Methods Data Review, 2017, have been considered during validation of this data and its usability.

Table 1 provides a summary of major and minor data quality issues identified for this data set. All data are acceptable except those results which have been qualified with "R," rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

Per USEPA Region 2 Validation Guidance, "All data users should note two facts. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables even as a last resort. The second, no analyte concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error."

HOLDING TIME/SAMPLE HANDLING

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

The samples in this delivery group were prepared and analyzed within the holding time specified in the validation and method specified guidelines.

The samples in this delivery group were received by the laboratory within the proper temperature range as specified in the validation and method guidance.

BLANK CONTAMINATION

Quality assurance blanks include method, storage, trip, field, or rinse blanks. Blanks are prepared to identify any contamination, which may have been introduced into the samples during laboratory preparation and analysis or field activity. Method and storage blanks measure laboratory contamination. Trip blanks measure cross contamination during shipment. Field and rinse blanks measure cross contaminations.

Method Blanks

Method blanks were prepared and analyzed in association with the samples in this delivery group at the specified frequency. Upon examination of the method blank data, no analyte was positively identified at a concentration equal to or above the method detection limit (MDL) in any associated method blank.

Field Blanks

Sample 915239-FB042618 was submitted as a field blank in association with this sample delivery group (SDG). Upon examination of the field blank data, no analyte was positively identified at a concentration equal to or above the method detection limit (MDL) in the associated field blank.

PEAK ASYMMETRY FACTOR

A peak asymmetry factor must be calculated initially and every time a calibration curve is generated. The peak asymmetry factor for the first two eluting peaks in a midlevel calibration standard must fall in the range of 0.8 to 1.5.

All peak asymmetry factors were fully compliant.

CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative results. The initial calibration curve demonstrates that the instrument is capable of giving acceptable performance at the beginning of an analytical sequence. The continuing calibration verifies that the instrument is continuing to provide satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

Percent Relative Standard Deviation and Percent Deviation

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range. Percent deviation (%D) compares the response factor of the continuing calibration with the mean response factor of the initial calibration. Therefore, %D is a measure of the instrument's daily performance.

The following QC criteria have been applied for this project:

The %RSD of initial calibration must be <30%.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >90%) requires rejection of non-detected results.

The %D for all analytes and surrogates in the continuing calibration must be <30% with the exception of the lowest level continuing calibration which must have all a %D for all analytes <50% and surrogates <30%.

A value outside these limits indicates the potential for detection and quantitation errors. For these reasons, all positive results are qualified as estimated "J," and non-detects are qualified with "UJ."

All initial calibration and continuing calibration %RSD and %D values were within defined QC criteria.

Note: both an opening and closing continuing calibration were performed.

INTERNAL STANDARDS PERFORMANCE

Internal standard performance criteria are meant to ensure that the liquid chromatograph/tandem mass spectrometer (LC/MS/MS) sensitivity and response are stable during every experimental run.

The internal standard area count must not vary by more than +/- 50% from the associated midlevel initial calibration standard. The retention time of the internal standard must not vary by more than +/-30 seconds from the associated midlevel initial calibration standard. The area count must be within -50% to 150% range of the associated standard. If area count is >150%, non-detected results are not qualified while positive results are qualified "J," estimated. When an observed area count is <50%, results are qualified "J" or "UJ" as appropriate; however, should area counts be <25%, all associated non-detects are qualified "R," rejected.

The reported sample analyses and associated method blank had internal standard areas and retention times within QC criteria in all cases.

SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique.

The reported sample analyses and method blank had observed surrogate recoveries within the established limits (recovery 70-130%) in all cases.

COMPOUND IDENTIFICATION

Per-fluorinated Compounds

The project target analyte compounds are identified on the LC/MS/MS by using the analytes relative retention time (RRT) and ion spectra. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound, and have ion spectra with primary and secondary characteristic ions present. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

All samples were evaluated at a Stage level 4. Compound identification verification was performed at this validation level and all identification criteria were met for positive results reported.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The matrix spike and matrix spike duplicate (MS/MSD) are generated to determine the precision and accuracy of the analytical procedure in a given sample matrix.

Sample 915239-MW-01 was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all precision and accuracy indicators were favorable with the exceptions described below.

Observed recoveries for 6:2 Fluorotelomersulfonate were higher than the highest acceptance limit. No qualification of sample results was necessary on this basis as high bias is indicated and 6:2 Fluorotelomersulfonate has been reported as not detected in sample 915239-MW-01.

Note; a low-level matrix spike solution was used in the evaluation described above. Accuracy acceptance limits used for a low-level evaluation are 50-150%, while medium level evaluation acceptance criteria are 70-130%.

Also, accuracy and precision are not evaluated when the amount of an analyte native to the sample is greater than four times the amount of spike added during the matrix spike determination.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) is spiked with the same analytes at the same concentrations as the matrix spike. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

Two associated LCS duplicate (LCSD) evaluation were performed, all observed recoveries and relative percent differences were found to be acceptable (low level spike added recovery 50-150%).

REPORTING

No dilutions, re-extractions, or other re-analyses were performed.

Contract required quantitation limits (CRQLs) achieved could not be compared to project-specific objectives as the analyses evaluated were not included in the project specific Quality Assurance Project Plan.

OTHER QUALITY CONTROL DATA OUT OF SPECIFICATION

None.

FIELD DUPLICATE

Field duplicates are two (or more) field samples collected at the same time in the same location. Each of the samples represents the same population and is carried through all steps of the sampling and analytical procedures in an identical manner. Field duplicate results are used to assess precision of the total method, including sampling, analysis, and site heterogeneity.

Samples 915239-MW-10 and 915239-MW-DUP comprise the field duplicate pair collected in association with this SDG. Upon evaluation adequate field precision was demonstrated in all cases.

SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.
Table 1 **Review Elements Summary**

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	х		
Method Blanks	х		
Field Blanks	х		
Peak Asymmetry Factor	х		
Calibration Percent Relative Standard Deviation and Percent Difference	х		
Internal Standards Performance	х		
Surrogates	х		
Compound Identification	х		
Matrix Spike/Matrix Spike Duplicate			
Laboratory Control Sample	х		
Other Quality Control Data out of Specification	х		
Field Duplicate	х		

Major= Major data quality issue identified resulting in rejection of data. Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations. NA = Not applicable

Table 2Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
UJ-	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise, and the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.



DATA VALIDATION REPORT FOR 1,4-DIOXANE

SITE: 5565 River Road

LABORATORY: Con-Test Analytical Laboratory

SAMPLE DELIVERY GROUP: 18D1337

MATRIX: Water

VALIDATION LEVEL: 4

This sample delivery group consists of the following samples:

915236-MW-01	915236-MW-08
915236-MW-02	915236-MW-10
915236-MW-03	915236-MW-DUP
915236-MW-05	915236-FB042818

The samples described above were analyzed via USEPA SW-846 8270D to determine the concentrations of 1,4-dioxane. The method was modified to include isotopic dilution quantitation.

Project specific quality assurance (QA) objectives, as well as the USEPA Region II SOP, Validating Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8270D, HW-22 Revision 5, December 2010, have been considered during validation of this data and its usability.

Table 1 provides a summary of major and minor data quality issues identified for this data set. All data are acceptable except those results which have been qualified with "R," rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

Per USEPA Region 2 Validation Guidance, "All data users should note two facts. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables even as a last resort. The second, no analyte concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error."

HOLDING TIME/SAMPLE HANDLING

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

The samples in this delivery group were prepared and analyzed within the holding time specified in the validation guidelines.

The samples in this delivery group were received by the laboratory within the proper temperature range as specified in the validation guidance.

BLANK CONTAMINATION

Quality assurance blanks include method, storage, trip, field, or rinse blanks. Blanks are prepared to identify any contamination, which may have been introduced into the samples during laboratory preparation and analysis or field activity. Method and storage blanks measure laboratory contamination. Trip blanks measure cross contamination during shipment. Field and rinse blanks measure cross contaminations.

Method Blanks

Method blanks were prepared and analyzed in association with the samples in this delivery group at the specified frequency. Upon examination of the method blank data, no analyte was positively identified at a concentration equal to or above the reporting detection limit in any associated method blank.

Field Blanks

Sample 915236-FB042818 was the field/rinse blanks submitted in association with this sample delivery group (SDG). Upon examination of the field blank data, no analyte was positively identified at a concentration equal to or above the reporting detection limit.

MASS SPECTROMETER TUNING

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances.

The tuning standard for semivolatiles is decafluorotriphenylphosphine (DFTPP).

All instrument tunes were fully compliant.

CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative results. The initial calibration curve demonstrates that the instrument is capable of giving acceptable performance at the beginning of an analytical sequence. The continuing calibration verifies that the instrument is continuing to provide satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

Response Factor

The relative response factor (RRF) measures the instrument's responses to specific chemical compounds. The response factors for the base neutral acid (BNA) target compound list (TCL) analytes must be ≥ 0.05 in both the initial and continuing calibrations. A value less than the respective criteria indicates serious detection and quantitation problems. If the mean RRF of the initial calibration or the continuing calibration RRF is <0.05 for any analyte, those analytes detected in environmental samples will be qualified as estimated. All non-detects for those analytes will be rejected.

The RRF values in all initial and continuing calibrations were found to be acceptable in all cases.

Note: no closing continuing calibration was performed.

Percent Relative Standard Deviation and Percent Deviation

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range. Percent deviation (%D) compares the response factor of the continuing calibration with the mean response factor of the initial calibration. Therefore, %D is a measure of the instrument's daily performance.

The following QC criteria have been applied for this project:

The %RSD of initial calibration must be <20%.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >90%) requires rejection of non-detected results.

The %D for continuing calibration must be <20%.

A value outside these limits indicates the potential for detection and quantitation errors. For these reasons, all positive results are qualified as estimated "J," and non-detects are qualified with "UJ."

All initial calibration and continuing calibration %RSD and %D values were within defined quality control criteria without exception.

Note: no closing continuing calibration was performed.

INTERNAL STANDARDS PERFORMANCE

Internal standard performance criteria are meant to ensure that the gas chromatograph/mass spectrometer (GC/MS) sensitivity and response are stable during every experimental run.

The internal standard area count must not vary by more than a factor of two from the associated continuing calibration standard. The retention time of the internal standard must not vary by more than +/-30 seconds from the associated continuing calibration standard. The area count must be within -50% to 200% range of the associated standard. If area count is >200%, non-detected results are not qualified while positive results are qualified "J," estimated. When an observed area count is <50%, results are qualified "J" or "UJ" as appropriate; however, should area counts be <25%, all associated non-detects are qualified "R," rejected.

The reported sample analyses and associated method blank had internal standard areas and retention times within QC criteria in all cases.

SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique.

The reported sample analyses and method blank had observed surrogate recoveries within the limits established by the laboratory in all cases.

COMPOUND IDENTIFICATION

Semivolatile

The project target analyte compounds are identified on the GC/MS by using the analytes relative retention time (RRT) and ion spectra. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound, and have ion spectra which has a ratio of the primary and secondary ion intensities within 20% of that in the standard compound. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

All samples were validated to level 4. Compound identification verification was performed at this validation level and no anomalies were identified.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The matrix spike and matrix spike duplicate (MS/MSD) are generated to determine the precision and accuracy of the analytical procedure in a given sample matrix.

Sample 915236-MW-01 was submitted for MS/MSD evaluation in association with this SDG. Laboratory derived acceptance criteria were used to assess the MS/MSD performance. Upon evaluation all precision and accuracy indicators were acceptable.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) is spiked with the same analytes at the same concentrations as the matrix spike. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix.

Two associated LCS and LCS duplicate (LCSD) evaluations were performed. Laboratory derived acceptance criteria were used to assess the LCS/LCSD performance. Upon evaluation, all observed recoveries and relative percent differences were found to be acceptable.

REPORTING

No dilutions, re-extractions, or other re-analyses were performed.

Contract required quantitation limits (CRQLs) achieved could not be compared to project-specific objectives as the analyses evaluated were not included in the project specific Quality Assurance Project Plan.

OTHER QUALITY CONTROL DATA OUT OF SPECIFICATION

None.

FIELD DUPLICATE

Field duplicates are two (or more) field samples collected at the same time in the same location. Each of the samples represents the same population and is carried through all steps of the sampling and analytical procedures in an identical manner. Field duplicate results are used to assess precision of the total method, including sampling, analysis, and site heterogeneity.

Samples 915236-MW-DUP and 915236-MW-08 comprise the field duplicate pair associated with samples in this SDG. Upon evaluation adequate field precision was demonstrated.

SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

Table 1 **Review Elements Summary**

	Were acceptance criteria met?		
	Yes No		
1,4-Dioxane		Major	Minor
Holding Time/Sample Handling	х		
Method Blanks	х		
Field Blanks	х		
Mass Spectrometer Tuning	х		
Calibration Response Factor	х		
Calibration Percent Relative Standard Deviation and Percent Difference			
Internal Standards Performance	х		
Surrogates	х		
Compound Identification - Semivolatile	х		
Tentatively Identified Compounds - Semivolatile	х		
Matrix Spike/Matrix Spike Duplicate			
Laboratory Control Sample	х		
Other Quality Control Data out of Specification	х		
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