March 2, 2021

Mr. Jeremy Mitchell
Wisconsin Department of Natural Resources
625 East County Road Y, Suite No. 700
Oshkosh, WI 54901-9731

Re: Appleton Wire, Former Albany International Chrome Plant – Appleton, WI
Project Semi-annual Remedial Status Update
BRRTS# 02-45-000015

Dear Mr. Mitchell:

EnviroForensics, LLC (EnviroForensics) is submitting this semi-annual project remedial status update to provide the Wisconsin Department of Natural Resources (Department) with additional recent data collected at the above-referenced site. This report includes the results of additional groundwater sampling performed during the second half of 2020 and replaces Department Form 4400-194 as there are no active remedial systems in operation at the site. Although our sampling has been focused on monitoring the stability of post-remedial concentrations of chromium in groundwater, we are also reporting the results of recent expanded groundwater sampling for per- and polyfluorinated alkyl substances (PFAS). These compounds were detected in a limited number of groundwater monitoring wells sampled during the last June of 2019 event.

Chromium Sampling Results

Groundwater monitoring wells were sampled for the fourth time in 2020 (April, June-July, September, and December) following remedial injections to sequester chromium performed in August of 2019. The frequency of sampling and location of all site wells is shown on attached **Figure 1**. A summary of the sampling results both prior to and following remediation is presented in attached **Table 1**, and groundwater elevations for the current monitoring period are provided in **Table 2**. Copies of the complete laboratory analysis sheets are attached. Groundwater flow maps for the second half of 2020 are presented as attached **Figures 2** and **3**.

As can be seen in **Table 1** and the laboratory analysis results sheets, concentrations of chromium in groundwater have remained below the groundwater preventative action limit (PAL) in all wells, except for MW-20R which contained a concentration of 22.8 µg/L during the September 29th sampling event. This concentration exceeds the PAL of 10 µg/L. However, during the December sampling event, the concentration of chromium in MW-20R was below the laboratory detection limits. Concentrations of the reactant iron have also decreased over time.

EnviroForensics, LLC
N16W23390 Stone Ridge Drive, Suite G, Waukesha, WI 53188
Phone: 317-972-7870 • Fax 317-972-7875

We are planning to follow the same monitoring schedule for sampling in 2021 that is presented on attached **Figure 1**.

PFAS Sampling Results

Initially, in June of 2020, three (3) wells (MW-19R, MW-20R, and MW-28R) were sampled for PFAS. These wells are located within the former chrome plating section of the current building (now used as a warehouse). Several PFAS were detected in these initial wells with perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) concentrations exceeding the individual or combined proposed groundwater enforcement standard (ES) of 20 part per trillion (ppt). During the December 2020, these wells were re-sampled along with an up-gradient well (MW-22), a side-gradient well (MW-21), down-gradient off-property wells MW-2 and MW-5, and one futher down-gradient well (MW-1).

As can be seen in **Table 3**, and the attached laboratory analytical results sheets, most wells contained PFOA and/or PFOS in concentrations exceeding the proposed ES of 20 ppt either singly or in combination. The exceptions were warehouse well MW-20R, side-gradient well MW-21 located in the active manufacturing area, and the furthest down-gradient well MW-1 on Appvion property. The greatest combined concentrations of PFOA and PFOS were detected in up-gradient property boundary well MW-22.

The highest relative concentrations of any PFAS were perfluorobutyrate (PFBA) and perfluorobutane sulfonic acid (PFBS) which were detected at various concentrations in all wells. These compounds are more soluble in water than most other PFAS, and are free to migrate like most other PFAS because they do not readily degrade by microbial action. PFBA is somewhat more mobile in groundwater that PFBS because it does not adsorb to soil particles as readily as PFBS. PFBA is a breakdown product of other PFAS (Minnesotal Department of Health PFBA and Drinking Water, August 2017). Interestingly, PFBS is a more recent replacement compound for PFOS (US EPA Technical Fact Sheet: Draft Toxicity Assessments for GenX Chemicals and PFBS). The phase out of PFOS and wide use of PFBS began around or after 2002 when 3M stopped manufacturing PFOS. As such, it would not be expected to have been released at this site during a chrome plating operation which was discontinued in 1981.

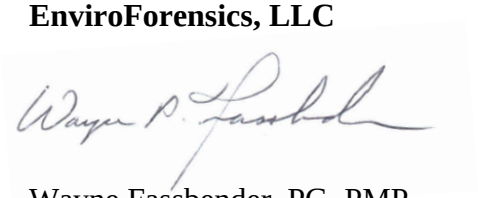
Albany International has stated in a past submittal to the WDNR that they evaluated the use of PFAS compounds for mist suppressant, but instead decided they did not want to introduce this compound into their delicate manufacturing process. Instead, they decided to use mechanical air extraction methods to remove the mist, and air scrubbing to remove the chromium from the mist. If PFAS-containing mist suppressants would have been used in the former chrome plating operation, these compounds would be present along with the chromic acid plating solution and incorporated within the significant subsurface releases of chromium identified. The relatively low concentrations of PFAS are not indicative of a source area release. Further, the greatest concentrations of combined PFOA and PFOS were detected in the up-gradient property

boundary well. It is more likely that the source of these detected PFAS compounds is from a local off-site source, or they may be residual from fire fighting activities on site or in the vicinity where PFAS-containing foam may have been used. We have currently requested a record review of historic fire-fighting information from the local Appleton Fire Department and will report the results when they become available.

It is unlikely that the PFAS detections in groundwater are the result of past chrome plating operations performed by Albany International due to the types of PFAS detected and the fact that the greatest concentrations of PFAS were detected in monitoring well MW-22 that is at the north property boundary and up-gradient to the direction of groundwater flow. Therefore, we recommend that a historical use background study be performed to identify potential current or past nearby commercial or industrial entities that could have produced the detected PFAS.

If you have any questions or require additional information, feel free to contact me at 414-982-3988, or by email at wfassbender@enviroforensics.com.

Sincerely,
EnviroForensics, LLC



Wayne Fassbender, PG, PMP
Senior Project Manager

Attachments:

NR 712 Certification Statements
Table 1: Groundwater Remediation Performance Monitoring Data
Table 2: Groundwater Elevation Data
Table 3: PFAS Groundwater Analytical Results
Figure 1: Post-remedial Groundwater Monitoring Well Network
Figure 2: Direction of Groundwater Flow, September 28, 2020
Figure 3: Direction of Groundwater Flow, December 28, 2020
Laboratory Analytical Results Sheets

Cc (via email):

Joe Gaug, Albany International
Michael Boozer, Chem Reports (in care of Luvata Appleton, LLC)

ENVIRO forensics

CERTIFICATIONS

I, Robert Fedorchak, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

WISCONSIN
ROBERT S FEDORCHAK
E-47469
ANDERSON IN
PROFESSIONAL ENGINEER

_____Senior Engineer, Lic. No. E-47469_____
Signature, title and P.E. number

I, Wayne Fassbender, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Senior Project Manager
Signature and title

3/2/21
Date

WISCONSIN
WAYNE P. FASSBENDER
G-485
OCONOMOWOC, WI
PROFESSIONAL GEOLOGIST

TABLE 1
GROUNDWATER REMEDIATION PERFORMANCE MONITORING DATA
Former Appleton Wire Facility
908 North Lawe Street, Appleton, Wisconsin

Monitoring Well Identification	Screen Interval	Remediaion Status	Sample Date	Dissolved Metals			Field Parameters					
				Chromium	Manganese	Iron	Temperature	pH	Specific Conductance	Oxidation Reduction Potential	Turbidity	Dissolved Oxygen
Reporting Units				**µg/L**	**µg/L**	**µg/L**	**Celsius**	**S.U.**	**mS/cm**	**mV**	**NTU**	**mg/L**
NR-140 Enforcement Standard (ES)				**100**	**300**	**300***						
NR-140 Preventative Action Limit (PAL)				**10**	**60**	**150***						
MW-2	9.7 - 19.7	Pre	6/29/2017	**29.5**	NA	NA	NA	NA	NA	NA	NA	NA
			8/31/2017	<2.5	NA	NA	NA	NA	NA	NA	NA	NA
		Post Full Scale	7/1/2020	<3.9	**14.8**	**100**	17.40	7.74	2.87	41.7	319.5	7.24
MW-5	10.4 - 20.4	MW-5+9:23	8/31/2017	**256**	NA	NA	NA	NA	NA	NA	NA	NA
		Post Full Scale	4/10/2020	**12.7 J**	**462**	**13,800**	12.65	6.94	2.93	-43	39.0	1.35
			7/1/2020	<3.9	**408**	**11,500**	18.94	7.45	2.53	-58	138.0	3.25
			9/29/2020	<3.9	**346**	**10,100**	17.01	6.93	2.79	-37.1	45.0	1.95
			12/29/2020	<3.9	**353**	**4,110**	10.37	7.16	2.80	-144.8	7.8	6.74
MW-5A	42 - 47	Post Full Scale	7/1/2020	<3.9	**1,050**	**13,500**	16.03	6.88	3.37	-47.6	163.0	2.90
MW-19/19R	4.8 - 14.8	Pre	6/29/2017	**23,600**	NA	NA						
			8/31/2017	**13,600**	NA	NA						
			4/23/18	**18,900**	<11.3	<155	16.60	7.53	1.31	177	0.0	10.17
		Post Pilot Test	7/16/18	**172**	**948**	**22,400**	20.20	6.55	2.35	27	0.0	8.56
		Post Pilot Test	8/20/18	**97.6**	**1640**	**88,200**	19.66	6.26	2.67	-45	265	10.04
		Post Pilot Test**	1/21/2019	**16.1**	**608**	**12,200**	18.30	7.52	2.56	-81	373	0.06
		Post Full Scale	4/10/2020	<3.9	**59.4**	**6,870**	18.98	7.04	1.33	-56	118	2.17
			6/30/2020	<3.9	**111**	**8,880**	21.90	6.91	1.40	-71.2	176	1.34
			9/29/2020	<3.9	**40.6**	**2,930**	18.64	7.43	1.15	44.8	19.3	3.06
			12/29/2020	<3.9	**32.1**	**120**	13.55	7.47	1.25	-61.0	184.4	6.27
DUP-1			12/29/2020	<3.9	**23.3**	**30 J**	13.55	7.47	1.25	-61.0	184.4	6.27
MW-19A/19AR	37.5 - 42.5	Pre	6/29/2017	**8.1 J**	**17.8**	**29.0 J**	18.44	8.04	0.44	4	26.3	9.75
			4/23/2017	<2.5	**26.2**	<15.5	15.60	7.95	0.49	27	81.4	10.83
		Post Full Scale	7/1/2020	<3.9	**28.9**	**130**	19.12	8.29	0.67	86.4	371.0	3.48
MW-20/20R	5.1 - 15.1	Pre	6/28/2017	**265,000**	NA	NA	NA	NA	NA	NA	NA	NA
			8/31/2017	**331,000**	NA	NA	NA	NA	NA	NA	NA	NA
			04/23/18	**296,000**	<11.3	<155	15.73	7.21	2.70	282	50.4	NA
		Post Pilot Test	07/16/18	**161,000**	**99.1**	**929 J**	20.33	7.10	2.73	78	47.8	8.76
			08/20/18	**174,000**	**73.1**	**156**	19.93	7.54	2.52	103	0.0	10.05
			1/21/2019	**179,000**	**37.1**	<35.4	17.09	8.20	2.55	126	1.9	5.02
		Post Full Scale	4/10/2020	**7.0**	**114**	**9,250**	17.90	7.48	1.41	-114	149	1.47
			6/30/2020	**10.9**	**166**	**23,000**	20.62	6.98	2.25	-102.7	934	1.01
			9/29/2020	**16.7**	**178**	**17,800**	20.36	7.09	2.15	-78.4	57.8	0.69
DUP-1			9/29/2020	**22.8**	**179**	**17,200**	NA	NA	NA	NA	NA	NA
			12/29/2020	<3.9	**160**	**1,950**	15.24	7.02	2.41	-81.9	235.4	4.09
MW-20A/20AR	29.7 - 34.7	Pre	06/28/17	**6.5 J**	**78.6**	**2,060**	15.88	7.83	0.66	-2	0.0	11.67
			04/23/18	<2.5	**24.5**	<15.5	15.19	7.95	0.83	247	97.0	10.24
		Post Full Scale	7/1/2020	<3.9	**51.4**	**430**	18.40	9.12	0.81	-3.7	0.1	1.77
MW-25	3.9 - 13.9	Post Full Scale	7/1/2020	<3.9	**139**	**680**	20.22	8.49	1.46	97.9	354.6	4.61
MW-26/26R	4.0 - 14.0	Pre	6/28/2017	**72,900**	NA	NA						
			8/31/2017	**84,900**	NA	NA						
		Post Pilot Test	07/16/18	**21,600**	**115**	**3,550**	19.66	7.45	1.39	-94	227	8.74
			08/20/18	**17,100**	**15.6**	<15.5	20.48	7.36	1.24	72	0.0	9.94
			1/21/2019	**26,700**	**1.5 J**	<35.4	16.46	8.24	1.31	95	2.7	4.40
		Post Full Scale	4/10/2020	<3.9	**17.9**	**220**	16.42	8.38	1.03	-117	194.0	2.15
			7/1/2020	<3.9	**39.3**	**110**	19.64	9.12	1.05	82.8	85.9	3.92
			9/29/2020	<3.9	**98.3**	**910**	19.95	7.73	1.30	-45.1	12.9	1.03
			12/29/2020	<3.9	**87.2**	**40 J**	15.08	7.84	1.44	-32.0	7.59	4.07
MW-28/28R	4.0 - 14.0	Pre	06/28/17	**3,890**	**43.2**	**53.6 J**	17.43	7.27	1.88	194	33.7	11.29
			8/31/2017	**390**	NA	NA	NA	NA	NA	NA	NA	NA
		Post Full Scale	4/10/2020**	<3.9	**67.8**	**680 J**	16.63	7.16	1.53	-46	94	0.34
			6/30/2020	<3.9	**206**	**20,800**	21.11	7.07	1.62	-114.5	208	1.49
			9/29/2020	<3.9	<4.2	**90 J**	19.15	7.27	1.11	138.2	16.5	2.23
			12/29/2020	<3.9	**62.6**	<30	15.71	7.50	1.39	-97.0	40.07	4.89
MW-30/30R	4.8 - 14.8	Pre	8/31/2017	**3,540**	NA	NA	NA	NA	NA	NA	NA	NA
		Post Full Scale	4/10/2020	<3.9	**20.1**	**900**	17.35	11.59	1.29	-175	230.0	0.97
			7/1/2020	<3.9	<4.2	**80 J**	20.23	11.20	1.88	40.4	163.9	3.57
			9/29/2020	<3.9	**52.2**	**2,240**	20.16	11.46	1.56	-107.2	48.2	1.01
			12/29/2020	<3.9	**23.3**	**30 J**	13.69	11.67	1.49	-89.6	148	4.78
MW-31	4.2 - 14.2	Post Full Scale	7/2/2020	<3.9	**615**	**26,400**	22.55	6.72	8.92	-57.7	498.6	1.74
MW-31A	29.5 - 34.5	Post Full Scale	7/2/2020	<3.9	**7,310**	**217,000**	16.22	7.71	1.96	-141.2	1718.0	0.11
MW-32	4.3 - 14.3	Post Full Scale	7/2/2020	<3.9	**59.9**	**60 J**	16.34	7.84	5.39	123.7	174.6	4.04
MW-32A	27.5 - 32.5	Post Full Scale	7/2/2020	<3.9	**38**	**160**	15.33	8.04	1.62	124.4	608.0	5.52

Notes:

Bolded values are above laboratory detection limits

Bolded and blue colored values are above the groundwater preventative action limit (PAL)

Bolded and orange colored values are above the groundwater enforcement standard (ES)

J = Analyte concentration detected between the laboratory Reporting Limit and Method Detection Limit

* = Values based on Public Welfarre Groundwater Quality Standards

** = Purging and sampling performed using low-flow methods. All other samples collected using a bailer.

NA = Not Analyzed

S.U. = Standard Units

mS/cm = Millisiemens per centimeter

mV = millivolt

NTU = Nephelometric Turbidity Unit

µg/L = micrograms per liter

mg/L = milligrams per liter

TABLE 2
GROUNDWATER ELEVATION DATA
Former Appleton Wire
908 N. Lawe St., Appleton, WI 54911

Well Identification	Date	TOC Elevation (feet AMSL)	Depth to Water (feet below TOC)	Groundwater Elevation (feet AMSL)
MW-1	09/28/20	767.62	6.12	761.50
	12/28/20	767.62	6.89	760.73
MW-2	09/28/20	768.55	7.25	761.30
	12/28/20	768.55	8.63	759.92
MW-5	09/28/20	767.86	4.09	763.77
	12/28/20	767.86	4.28	763.58
MW-10R	09/28/20	767.31	6.28	761.03
	12/28/20	767.31	5.88	761.43
MW-17	09/28/20	771.92	5.23	766.69
	12/28/20	771.92	7.03	764.89
MW-18	09/28/20	769.97	8.33	761.64
	12/28/20	769.97	8.89	761.08
MW-19R	09/28/20	768.42	3.19	765.23
MW-20R	09/28/20	768.44	2.30	766.14
MW-21	09/28/20	769.02	4.75	764.27
	12/28/20	769.02	5.45	763.57
MW-22	09/28/20	769.01	3.09	765.92
	12/28/20	769.01	4.49	764.52
MW-23	09/28/20	767.95	6.88	761.07
	12/28/20	767.95	6.44	761.51
MW-24	09/28/20	766.89	6.02	760.87
	12/28/20	766.89	6.28	760.61
MW-24A	08/29/17	767.02	15.63	751.39
	04/07/20	767.02	15.83	751.19
MW-25	09/28/20	768.46	1.65	766.81
	12/28/20	768.46	2.84	765.62
MW-28R	09/28/20	768.38	4.59	763.79
MW-30R	09/28/20	768.42	2.80	765.62
	12/28/20	768.42	3.63	764.79
MW-31	09/28/20	768.65	0.93	767.72
MW-32	09/28/20	767.20	5.30	761.90

Notes

All values are in feet
AMSL = above mean sea level
DTW = Depth to water
TOC = Top of Casing
Monitoring wells re-surveyed in May 2017
NM= Not measured

TABLE 3
DETECTED PFAS IN GROUNDWATER

Albany International - Luvata Site
908 N. Lawe St., Appleton, Wisconsin

Monitoring Well	Sample Date	PFOA	PFOS	PFHxA	PFHxS	PFHpA	PFHpS	PFBA	PFBS	PFNA	PFDA	PFPeA	PFPeS	HFPO-DA
Proposed Groundwater Enforcement Standard		**20***	**20***	**150,000**	**40**	**NE**	**NE**	**10,000**	**450,000**	**30**	**300**	**NE**	**NE**	**300**
Proposed Groundwater Preventative Action Limit		**2***	**2***	**30,000**	**4**	**NE**	**NE**	**2,000**	**90,000**	**3**	**60**	**NE**	**NE**	**30**
MW-1	12/29/2020	**6.3**	**5.3**	**3.1 J**	**1.8 J**	**1.8 J**	<0.92	**17**	**5.1**	<0.92	**1.2 J**	**4.0**	<0.92	<1.8
MW-2	12/29/2020	**75**	**11**	**41**	**18**	**28**	<0.92	**220**	**69**	<1.0	**1.2 J**	**34**	<1.0	<2.1
MW-5	12/29/2020	**19**	**22**	**8.9**	<0.98	**7.4**	<0.98	**32**	**9.9**	**2.4 J**	<0.98	**9.5**	<0.98	<2.0
MW-19R	6/30/2020	**43.8**	**8.08**	**27.8**	**5.59**	**26.7**	**0.788 J**	**799**	**324**	**4.36**	**0.602 J**	**31.3**	**2.18**	<0.726
	12/29/2020	**52**	**16**	**34**	**6.5 J**	**31**	<1.9	**1000**	**830**	**5.9 J**	<1.9	**40**	**8.9**	<3.8
MW-20R	6/30/2020	**17.1**	**4.03**	**25.1**	**1.95**	NR	<0.730	**98.9**	NR	<0.788	<0.718	NR	<0.495	**3.25**
	12/29/2020	**10**	<0.97	<0.97	<0.97	<0.97	<0.97	**180**	**40**	<0.97	<0.97	<0.97	<0.97	<1.9
	12/29/2020 DUP	**10**	<1.2	<1.2	<1.2	<1.2	<1.2	**220**	**54**	<1.2	<1.2	<1.2	<1.2	<2.4
MW-21	12/29/2020	**9.8**	<0.99	**4.0**	**3.4 J**	**3.8 J**	<0.99	**150**	**89**	<0.99	<0.99	**2.7 J**	**1.6 J**	<2.0
MW-22	12/29/2020	**60**	**53**	**22**	**7.3**	**19**	<1.0	**83**	**26**	<1.0	<1.0	**12**	**1.9 J**	<2.1
MW-28R	6/30/2020	**30.2**	**16.2**	**15.3**	**3.23**	**13.3**	<0.854	**575FRB**	**27.1**	**6.7**	<0.839	**13.6**	**1.93**	<1.13
	12/29/2020	**16**	**9.5**	**8**	<0.89	**5.4**	<0.89	**43**	**14**	**3.3 J**	<0.89	**7.1**	<0.89	<1.8

Notes:

All concentrations reported in units of nanograms per liter (ng/L)

Bolded and blue shaded values are above propesed groundwater preventative action limits

Bolded and orange shaded values are above proposed groundwater enforcement standards

Bolded values are above detection limits

***** Proposed groundwater standard applies to individual compound or combined PFOA and PFOS

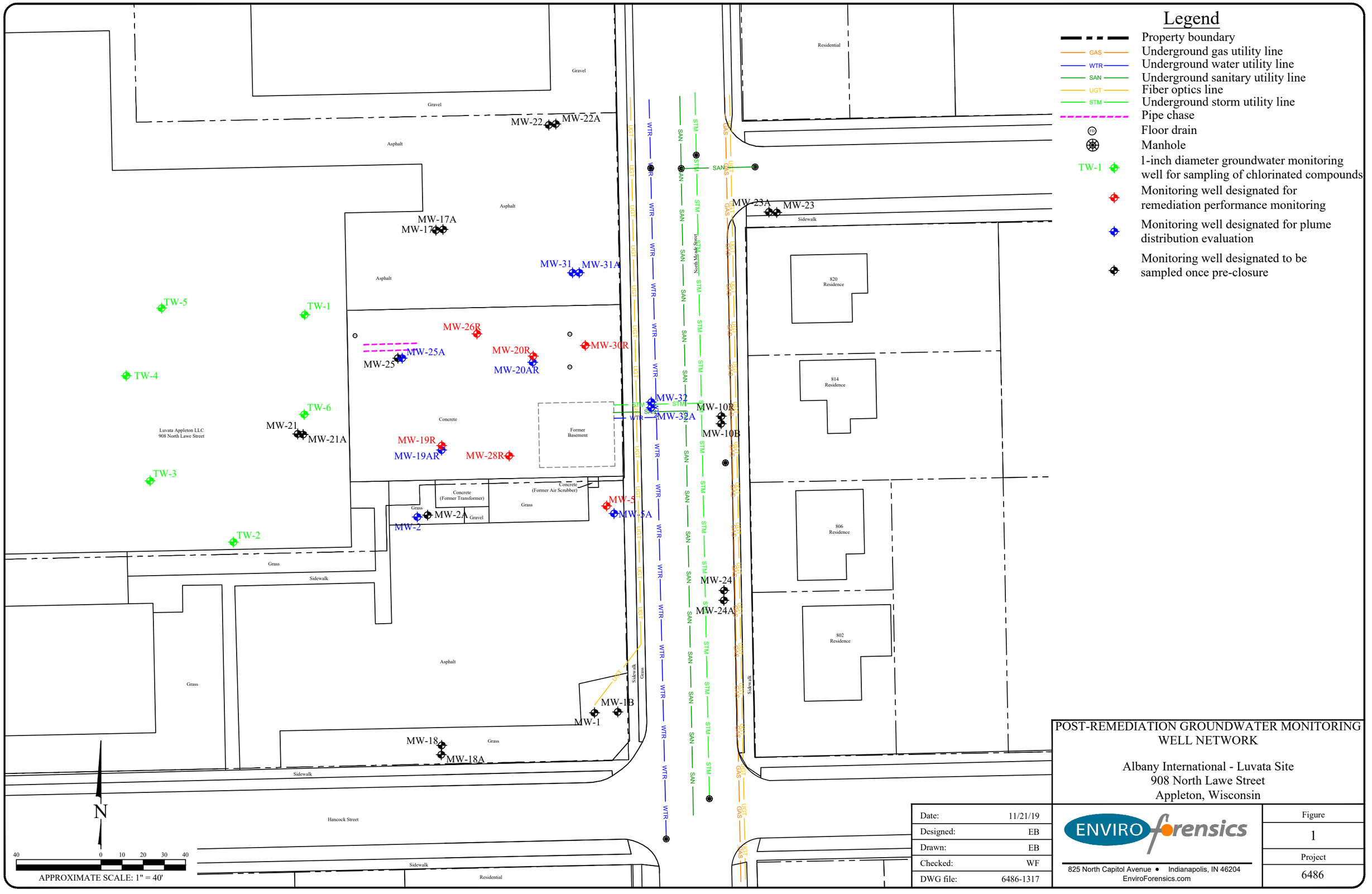
J = Analyte concentration detected between the laboratory level of detection and the level of quantification

FRB = Compound detected in field reagent blank

NA = Not Analyzed

NR = Not reported due to failure of laboratory QC

NE = Not Established



POST-REMEDIATION GROUNDWATER MONITORING WELL NETWORK

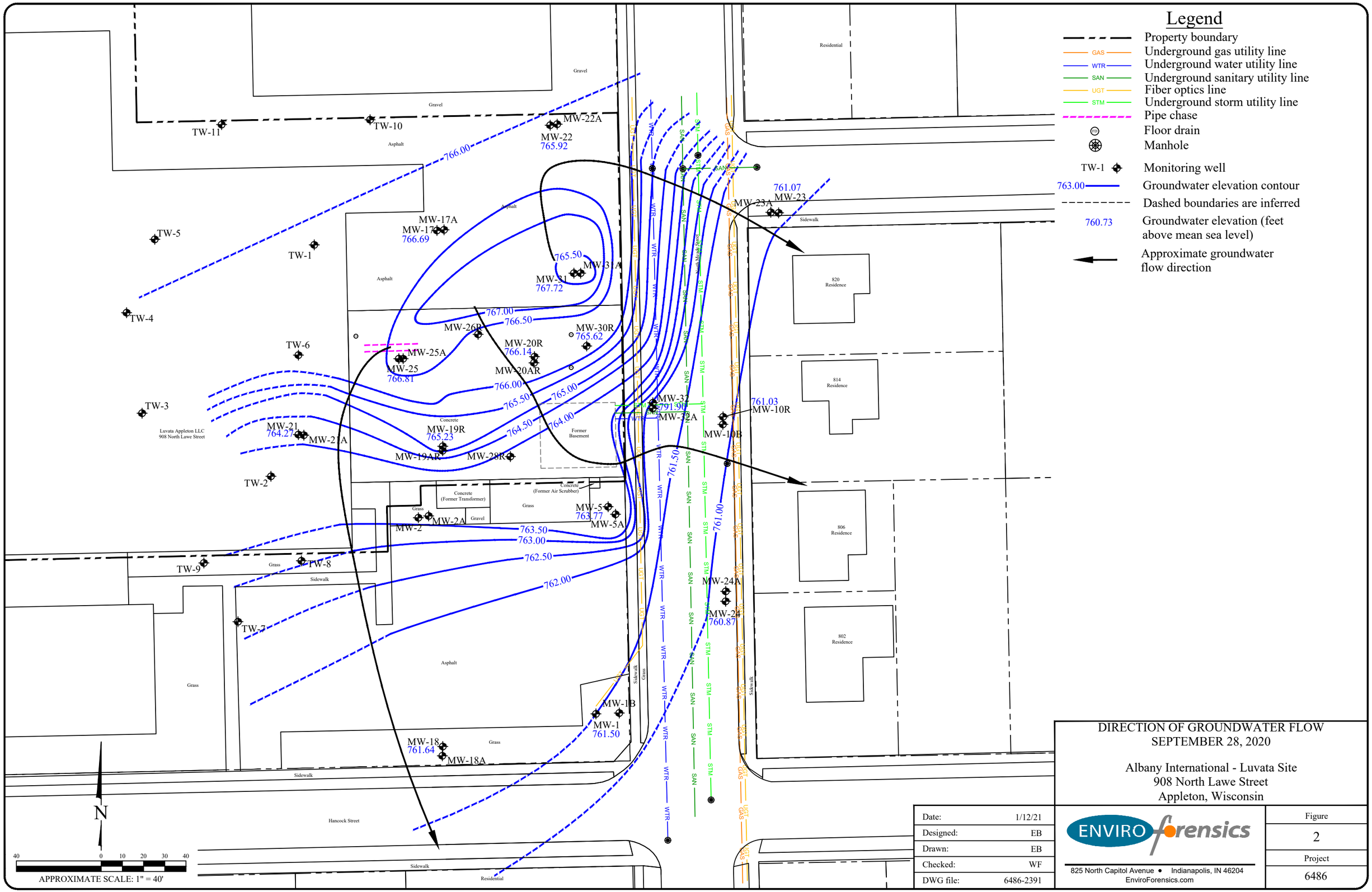
Albany International - Luvata Site
908 North Lawe Street
Appleton, Wisconsin

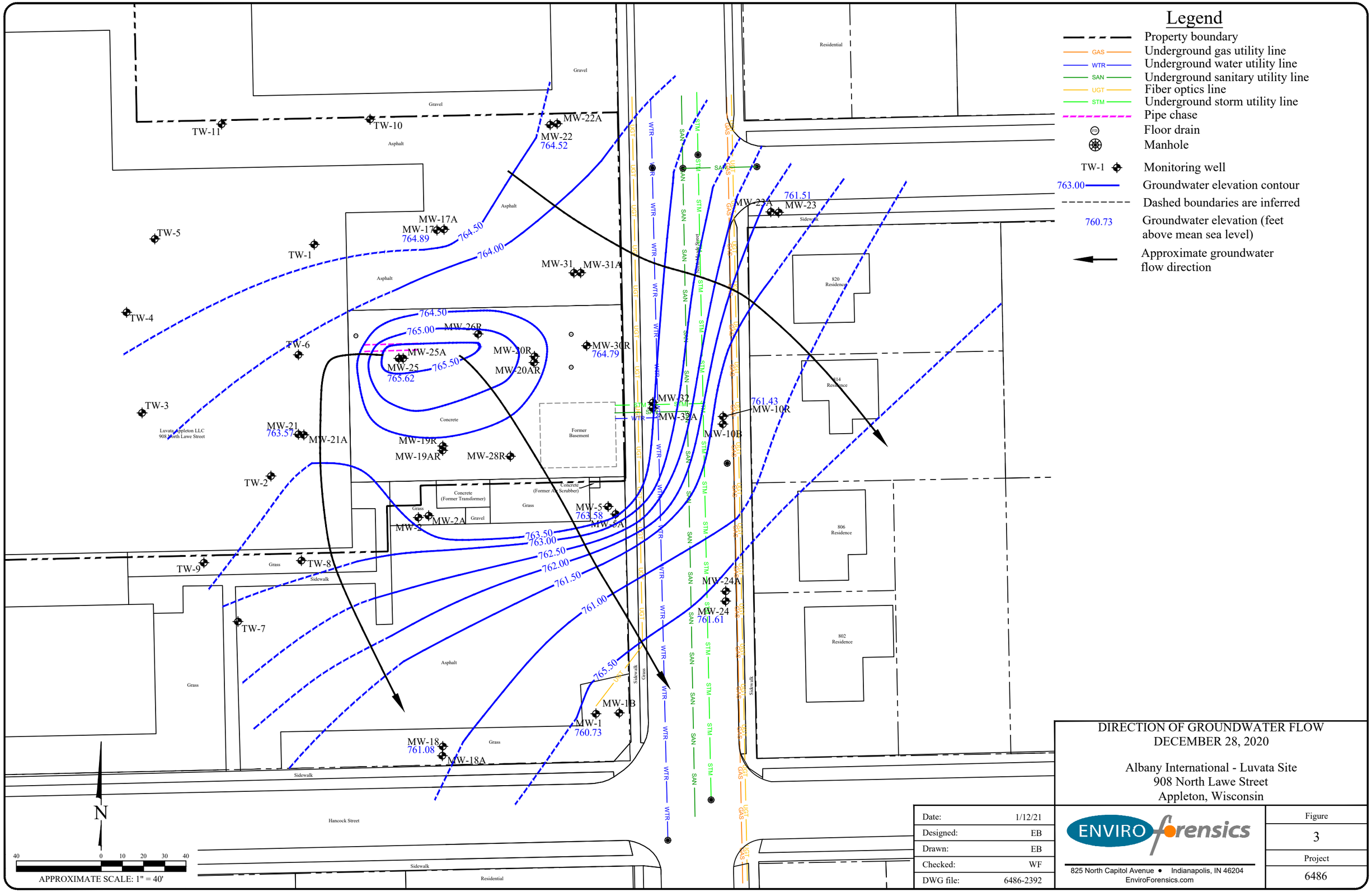
Date:	11/21/19
Designed:	EB
Drawn:	EB
Checked:	WF
DWG file:	6486-1317

ENVIRO forensics
825 North Capitol Avenue • Indianapolis, IN 46204
EnviroForensics.com

Figure 1

Project 6486


Legend
Property boundary
Underground gas utility line
Underground water utility line
Underground sanitary utility line
Fiber optics line
Underground storm utility line
Pipe chase
Floor drain
Manhole
TW-1 Monitoring well
763.00 Groundwater elevation contour
Dashed boundaries are inferred
760.73 Groundwater elevation (feet above mean sea level)
Approximate groundwater flow direction
TW-11
TW-10
MW-22A
MW-22
765.92
766.00
TW-5
TW-1
MW-17A
MW-17
766.69
Asphalt
765.50
MW-31A
MW-31
767.72
TW-4
767.00
766.50
MW-26R
MW-30R
765.62
TW-6
MW-20R
766.14
MW-25A
MW-25
766.81
MW-20AR
766.00
765.50
765.00
764.50
764.00
TW-3
MW-21
764.27
MW-21A
MW-19R
765.23
MW-19AR
MW-28R
TW-2
Concrete
(Former Transformer)
Concrete
(Former Air Scrubber)
Grass
Gravel
MW-5
763.77
MW-5A
MW-2A
MW-2
763.50
763.00
762.50
762.00
TW-9
TW-8
Sidewalk
TW-7
Grass
Asphalt
MW-1B
MW-1
761.50
MW-18
761.64
MW-18A
Hancock Street
Residential
Gravel
Asphalt
Concrete
Former Basement
Luvata Appleton LLC
908 North Lawe Street
761.07
MW-23
MW-23A
Sidewalk
820 Residence
814 Residence
806 Residence
802 Residence
MW-32
791.90
MW-32A
761.03
MW-10R
MW-10B
761.50
761.00
MW-24A
MW-24
760.87
Alleyway
N
40 0 10 20 30 40
APPROXIMATE SCALE: 1" = 40'
DIRECTION OF GROUNDWATER FLOW
SEPTEMBER 28, 2020
Albany International - Luvata Site
908 North Lawe Street
Appleton, Wisconsin
Date: 1/12/21
Designed: EB
Drawn: EB
Checked: WF
DWG file: 6486-2391
ENVIRO forensics
825 North Capitol Avenue • Indianapolis, IN 46204
EnviroForensics.com
Figure
2
Project
6486



DIRECTION OF GROUNDWATER FLOW
DECEMBER 28, 2020

Albany International - Luvata Site
908 North Lawe Street
Appleton, Wisconsin

Date:	1/12/21
Designed:	EB
Drawn:	EB
Checked:	WF
DWG file:	6486-2392

ENVIRO forensics
825 North Capitol Avenue • Indianapolis, IN 46204
EnviroForensics.com

Figure
3

Project
6486

Synergy Environmental Lab, INC

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

WAYNR FASSBENDER
ENVIROFORENSICS
N16 W 23390 STONERIDGE DR
WAUKESHA WI 53188

Report Date *07-Oct-20*

Project Name APPLETON, WI **Invoice #** E38551
Project # 6486 ALBANY INTL.

Lab Code 5038551A
Sample ID 6486-MW-19R
Sample Matrix Water
Sample Date 9/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		10/1/2020	CWT	1
Iron, Dissolved	2.93	mg/l	0.03	0.1	1	200.7		10/1/2020	CWT	1
Manganese, Dissolved	40.6	ug/L	4.2	13.8	1	200.7		10/1/2020	CWT	1

Lab Code 5038551B
Sample ID 6486-MW-28R
Sample Matrix Water
Sample Date 9/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		10/1/2020	CWT	1
Iron, Dissolved	0.09 "J"	mg/l	0.03	0.1	1	200.7		10/1/2020	CWT	1
Manganese, Dissolved	< 4.2	ug/L	4.2	13.8	1	200.7		10/1/2020	CWT	1

Lab Code 5038551C
Sample ID 6486-MW-30R
Sample Matrix Water
Sample Date 9/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		10/1/2020	CWT	1
Iron, Dissolved	2.24	mg/l	0.03	0.1	1	200.7		10/1/2020	CWT	1
Manganese, Dissolved	52.2	ug/L	4.2	13.8	1	200.7		10/1/2020	CWT	1

Project Name APPLETON, WI **Invoice #** E38551
Project # 6486 ALBANY INTL.

Lab Code 5038551D
Sample ID 6486-MW-20R
Sample Matrix Water
Sample Date 9/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	16.7	ug/L	3.9	12.8	1	200.7		10/1/2020	CWT	1
Iron, Dissolved	17.8	mg/l	0.03	0.1	1	200.7		10/1/2020	CWT	1
Manganese, Dissolved	178	ug/L	4.2	13.8	1	200.7		10/1/2020	CWT	1

Lab Code 5038551E
Sample ID 6486-MW-26R
Sample Matrix Water
Sample Date 9/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		10/1/2020	CWT	1
Iron, Dissolved	0.91	mg/l	0.03	0.1	1	200.7		10/1/2020	CWT	1
Manganese, Dissolved	98.3	ug/L	4.2	13.8	1	200.7		10/1/2020	CWT	1

Lab Code 5038551F
Sample ID 6486-MW-5
Sample Matrix Water
Sample Date 9/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		10/1/2020	CWT	1
Iron, Dissolved	10.1	mg/l	0.03	0.1	1	200.7		10/1/2020	CWT	1
Manganese, Dissolved	346	ug/L	4.2	13.8	1	200.7		10/1/2020	CWT	1

Lab Code 5038551G
Sample ID 6486-DUP-1
Sample Matrix Water
Sample Date 9/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	22.8	ug/L	3.9	12.8	1	200.7		10/1/2020	CWT	1
Iron, Dissolved	17.2	mg/l	0.03	0.1	1	200.7		10/1/2020	CWT	1
Manganese, Dissolved	179	ug/L	4.2	13.8	1	200.7		10/1/2020	CWT	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

CWT denotes sub contract lab - Certification #445126660

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

www.synergy-lab.net
1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • mrsynergy@wi.twcbc.com

Chain # No 38948
Page 1 of 1

Sample Handling Request
____ Rush Analysis Date Required: _____
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #
QUOTE # : 8242
Project #: 6486 Albany Intl
Sampler: (signature) [signature]
Project (Name / Location): Appleton, WI

Reports To: W. Fassbender	Invoice To: Accounts Payable
Company Enviroforensics	Company Enviroforensics
Address	Address
City State Zip	City State Zip
Phone	Phone 317-972-7870
Email wfassbender@enviroforensics.com	Email accountspayable@enviro-forensics.com

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation
538551 A	6486-MW-19R	9/29/20	915	Y	1	GW	HNO_3
B	6486-MW-28R		935	Y	1	GW	HNO_3
C	6486-MW-30R		950	Y	1	GW	HNO_3
D	6486-MW-20R		1030	Y	1	GW	HNO_3
E	6486-MW-26R		1050	Y	1	GW	HNO_3
F	6486-MW-5		1130	Y	1	GW	HNO_3
G	6486-DUP-1		1200	Y	1	GW	HNO_3

Analysis Requested

DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	LEAD	NITRATE/NITRITE	OIL & GREASE	PAH (EPA 8270)	PCB	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	TOTAL SUSPENDED SOLIDS	VOC DW (EPA 524.2)	VOC (EPA 8260)	VOC AIR (TO - 15)	8-RCRA METALS	Chromium, Iron, Manganese	Other Analysis	PID/ FID
														X	X		
														X	X		
														X	X		
														X	X		
														X	X		
														X	X		
														X	X		

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge, etc.)
PO# 2020-1948

Sample Integrity - To be completed by receiving lab.
Method of Shipment: Client
Temp. of Temp. Blank: _____ °C On Ice: X
Cooler seal intact upon receipt: X Yes ____ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
[signature]	1630	9/29/20			

Received in Laboratory By: M.S Time: 16:30 Date: 9-29-20

Synergy Environmental Lab, INC

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

WAYNE FASSBENDER
ENVIROFORENSICS
N16 W 23390 STONERIDGE DR
WAUKESHA WI 53188

Report Date *13-Jan-21*

Project Name ALBANY **Invoice #** E38947
Project # 6486 PO#2020-1948

Lab Code 5038947A
Sample ID 6486 MW-5
Sample Matrix Water
Sample Date 12/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		1/11/2021	CWT	1
Iron, Dissolved	4.11	mg/l	0.03	0.1	1	200.7		1/11/2021	CWT	1
Manganese, Dissolved	353	ug/L	4.2	13.8	1	200.7		1/11/2021	CWT	1

Lab Code 5038947B
Sample ID 6486 MW-19R
Sample Matrix Water
Sample Date 12/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		1/11/2021	CWT	1
Iron, Dissolved	0.12	mg/l	0.03	0.1	1	200.7		1/11/2021	CWT	1
Manganese, Dissolved	32.1	ug/L	4.2	13.8	1	200.7		1/11/2021	CWT	1

Lab Code 5038947C
Sample ID 6486 MW-20R
Sample Matrix Water
Sample Date 12/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		1/11/2021	CWT	1
Iron, Dissolved	1.95	mg/l	0.03	0.1	1	200.7		1/11/2021	CWT	1
Manganese, Dissolved	160	ug/L	4.2	13.8	1	200.7		1/11/2021	CWT	1

Project Name ALBANY **Invoice #** E38947
Project # 6486 PO#2020-1948

Lab Code 5038947D
Sample ID 6486 MW-26R
Sample Matrix Water
Sample Date 12/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		1/11/2021	CWT	1
Iron, Dissolved	0.04 "J"	mg/l	0.03	0.1	1	200.7		1/11/2021	CWT	1
Manganese, Dissolved	87.2	ug/L	4.2	13.8	1	200.7		1/11/2021	CWT	1

Lab Code 5038947E
Sample ID 6486 MW-28R
Sample Matrix Water
Sample Date 12/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		1/11/2021	CWT	1
Iron, Dissolved	< 0.03	mg/l	0.03	0.1	1	200.7		1/11/2021	CWT	1
Manganese, Dissolved	62.6	ug/L	4.2	13.8	1	200.7		1/11/2021	CWT	1

Lab Code 5038947F
Sample ID 6486 MW-30R
Sample Matrix Water
Sample Date 12/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		1/11/2021	CWT	1
Iron, Dissolved	0.07 "J"	mg/l	0.03	0.1	1	200.7		1/11/2021	CWT	1
Manganese, Dissolved	< 4.2	ug/L	4.2	13.8	1	200.7		1/11/2021	CWT	1

Lab Code 5038947G
Sample ID 6486 DUP-1
Sample Matrix Water
Sample Date 12/29/2020

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Inorganic										
Metals										
Chromium, Dissolved	< 3.9	ug/L	3.9	12.8	1	200.7		1/11/2021	CWT	1
Iron, Dissolved	0.03 "J"	mg/l	0.03	0.1	1	200.7		1/11/2021	CWT	1
Manganese, Dissolved	23.3	ug/L	4.2	13.8	1	200.7		1/11/2021	CWT	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

CWT denotes sub contract lab - Certification #445126660

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

www.synergy-lab.net
1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • mrsynergy@wi.twcbc.com

Chain # No 38956

Page 1 of ____

Sample Handling Request

____ Rush Analysis Date Required: _____
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #	
QUOTE # :	
Project #: 6486	
Sampler: (signature) Wayne Fassbender	
Project (Name / Location): Albany, Appleton, WI	
Reports To: W. Fassbender	Invoice To: Same
Company Enviro Forensics	Company
Address Waukesha, WI	Address
City State Zip	City State Zip
Phone 262-490-6472	Phone
Email	Email

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	LEAD	NITRATE/NITRITE	OIL & GREASE	PAH (EPA 8270)	PCB	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	TOTAL SUSPENDED SOLIDS	VOC DW (EPA 524.2)	VOC (EPA 8260)	VOC AIR (TO - 15)	8-RCRA METALS	Dissolved Chromium	Dissolved Iron	Dissolved Manganese	PID/ FID
503994 A	6486-MW5	12/29/20	0850	N	1	GW	Ice															X	X	X	X	
B	6486-MW19R	"	0725		1	"	"															X	X	X	X	
C	6486-MW20R	"	0930		1	"	"															X	X	X	X	
D	6486-MW26R	"	0915		1	"	"															X	X	X	X	
E	6486-MW28R	"	0815		1	"	"															X	X	X	X	
F	6486-MW30R	"	0945		1	"	"															X	X	X	X	
G	6486-DUP-1	"			1	"	"															X	X	X	X	
	~~6486 Trip Blank~~																									

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge, etc.)

Lab to filter and preserve with nitric acid.

Use P.O. # 2020-1948

Sample Integrity - To be completed by receiving lab.

Method of Shipment: client

Temp. of Temp. Blank: _____ °C On Ice: C

Cooler seal intact upon receipt: X Yes ____ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
Wayne Fassbender	1255	12/29/20			

Received in Laboratory By: _____ Time: 1255 Date: 12-29-20

Report of Analysis

Enviroforensics
N16 W23390 Stone Ridge Drive
Suite G
Waukesha, WI 53188
Attention: Wayne Fassbender

Project Name: Albany

Project Number: 6496

Lot Number:**VL31055**

Date Completed:02/02/2021
Revision Date: 02/15/2021

02/15/2021 12:11 PM
Approved and released by:
Project Manager II: **Karen L. Coonan**

The electronic signature above is the equivalent of a handwritten signature.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Enviroforensics
Lot Number: VL31055

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Revised Report - February 15, 2021
A revised report was issued. The labeling of samples VL31055-004 and -010 have been corrected.

All other sample results are as reported in the original PDF report. This report supersedes and replaces any prior reports issued under this lot number.

Samples VL31055-003, VL31055-005, VL31055-006, and VL31055-007 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <10mL and reconstituted to 10mL using MeOH by transfer pipet.

For samples VL31055-009 and VL31055-004, sample matrix prevented full volume from being extracted, precluding method mandated bottle rinse. Surrogate recovery was affected for sample VL31005-009.

Surrogate recovery for the following samples was outside the upper control limit: VL31055-003, VL31055-008. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following samples was outside control limits: VL31055-005, VL31055-009. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary
Enviroforensics
Lot Number: VL31055

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	6486-MW1	Aqueous	12/29/2020 0920	12/31/2020
002	6486-MW2	Aqueous	12/29/2020 0905	12/31/2020
003	6486-MW5	Aqueous	12/29/2020 0850	12/31/2020
004	6486-MW19R	Aqueous	12/29/2020 0725	12/31/2020
005	6486-MW20R	Aqueous	12/29/2020 0930	12/31/2020
006	6486-MW21	Aqueous	12/29/2020 0825	12/31/2020
007	6486-MW22	Aqueous	12/29/2020 0920	12/31/2020
008	6486-MW28R	Aqueous	12/29/2020 0815	12/31/2020
009	6486-Dup 1	Aqueous	12/29/2020	12/31/2020
010	6486-FRB-1	Aqueous	12/29/2020 0725	12/31/2020
011	6486-FRB-2	Aqueous	12/29/2020 0920	12/31/2020

(11 samples)

Detection Summary

Enviroforensics

Lot Number: VL31055

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	6486-MW1	Aqueous	PFBS	PFAS by ID	5.1		ng/L	6
001	6486-MW1	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	6
001	6486-MW1	Aqueous	PFBA	PFAS by ID	17		ng/L	6
001	6486-MW1	Aqueous	PFDA	PFAS by ID	1.2	J	ng/L	6
001	6486-MW1	Aqueous	PFHpA	PFAS by ID	1.8	J	ng/L	6
001	6486-MW1	Aqueous	PFHxA	PFAS by ID	3.1	J	ng/L	6
001	6486-MW1	Aqueous	PFOA	PFAS by ID	6.3		ng/L	6
001	6486-MW1	Aqueous	PFPeA	PFAS by ID	4.0		ng/L	6
001	6486-MW1	Aqueous	PFOS	PFAS by ID	5.3		ng/L	6
002	6486-MW2	Aqueous	PFBS	PFAS by ID	69		ng/L	8
002	6486-MW2	Aqueous	PFHxS	PFAS by ID	18		ng/L	8
002	6486-MW2	Aqueous	PFBA	PFAS by ID	220		ng/L	8
002	6486-MW2	Aqueous	PFDA	PFAS by ID	1.2	J	ng/L	8
002	6486-MW2	Aqueous	PFHpA	PFAS by ID	28		ng/L	8
002	6486-MW2	Aqueous	PFHxA	PFAS by ID	41		ng/L	8
002	6486-MW2	Aqueous	PFOA	PFAS by ID	75		ng/L	8
002	6486-MW2	Aqueous	PFPeA	PFAS by ID	34		ng/L	8
002	6486-MW2	Aqueous	PFOS	PFAS by ID	11		ng/L	8
003	6486-MW5	Aqueous	PFBS	PFAS by ID	9.9		ng/L	10
003	6486-MW5	Aqueous	PFBA	PFAS by ID	32		ng/L	10
003	6486-MW5	Aqueous	PFHpA	PFAS by ID	7.4		ng/L	10
003	6486-MW5	Aqueous	PFHxA	PFAS by ID	8.9		ng/L	10
003	6486-MW5	Aqueous	PFNA	PFAS by ID	2.4	J	ng/L	10
003	6486-MW5	Aqueous	PFOA	PFAS by ID	19		ng/L	10
003	6486-MW5	Aqueous	PFPeA	PFAS by ID	9.5		ng/L	10
003	6486-MW5	Aqueous	PFOS	PFAS by ID	22		ng/L	10
004	6486-MW19R	Aqueous	PFBS	PFAS by ID	830		ng/L	12
004	6486-MW19R	Aqueous	PFPeS	PFAS by ID	8.9		ng/L	12
004	6486-MW19R	Aqueous	PFHxS	PFAS by ID	6.5	J	ng/L	12
004	6486-MW19R	Aqueous	PFBA	PFAS by ID	1000		ng/L	12
004	6486-MW19R	Aqueous	PFHpA	PFAS by ID	31		ng/L	12
004	6486-MW19R	Aqueous	PFHxA	PFAS by ID	34		ng/L	12
004	6486-MW19R	Aqueous	PFNA	PFAS by ID	5.9	J	ng/L	12
004	6486-MW19R	Aqueous	PFOA	PFAS by ID	52		ng/L	12
004	6486-MW19R	Aqueous	PFPeA	PFAS by ID	40		ng/L	12
004	6486-MW19R	Aqueous	PFOS	PFAS by ID	16		ng/L	12
005	6486-MW20R	Aqueous	PFBS	PFAS by ID	40		ng/L	14
005	6486-MW20R	Aqueous	PFBA	PFAS by ID	180		ng/L	14
005	6486-MW20R	Aqueous	PFOA	PFAS by ID	10		ng/L	14
006	6486-MW21	Aqueous	PFBS	PFAS by ID	89		ng/L	16
006	6486-MW21	Aqueous	PFPeS	PFAS by ID	1.6	J	ng/L	16
006	6486-MW21	Aqueous	PFHxS	PFAS by ID	3.4	J	ng/L	16
006	6486-MW21	Aqueous	PFBA	PFAS by ID	150		ng/L	16
006	6486-MW21	Aqueous	PFHpA	PFAS by ID	3.8	J	ng/L	16
006	6486-MW21	Aqueous	PFHxA	PFAS by ID	4.0		ng/L	16

Detection Summary (Continued)

Lot Number: VL31055

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
006	6486-MW21	Aqueous	PFOA	PFAS by ID	9.8		ng/L	16
006	6486-MW21	Aqueous	PFPeA	PFAS by ID	2.7	J	ng/L	16
007	6486-MW22	Aqueous	PFBS	PFAS by ID	26		ng/L	18
007	6486-MW22	Aqueous	PFPeS	PFAS by ID	1.9	J	ng/L	18
007	6486-MW22	Aqueous	PFHxS	PFAS by ID	7.3		ng/L	18
007	6486-MW22	Aqueous	PFBA	PFAS by ID	83		ng/L	18
007	6486-MW22	Aqueous	PFHpA	PFAS by ID	19		ng/L	18
007	6486-MW22	Aqueous	PFHxA	PFAS by ID	22		ng/L	18
007	6486-MW22	Aqueous	PFOA	PFAS by ID	60		ng/L	18
007	6486-MW22	Aqueous	PFPeA	PFAS by ID	12		ng/L	18
007	6486-MW22	Aqueous	PFOS	PFAS by ID	53		ng/L	18
008	6486-MW28R	Aqueous	PFBS	PFAS by ID	14		ng/L	20
008	6486-MW28R	Aqueous	PFBA	PFAS by ID	43		ng/L	20
008	6486-MW28R	Aqueous	PFHpA	PFAS by ID	5.4		ng/L	20
008	6486-MW28R	Aqueous	PFHxA	PFAS by ID	8.0		ng/L	20
008	6486-MW28R	Aqueous	PFNA	PFAS by ID	3.3	J	ng/L	20
008	6486-MW28R	Aqueous	PFOA	PFAS by ID	16		ng/L	20
008	6486-MW28R	Aqueous	PFPeA	PFAS by ID	7.1		ng/L	20
008	6486-MW28R	Aqueous	PFOS	PFAS by ID	9.5		ng/L	20
009	6486-Dup 1	Aqueous	PFBS	PFAS by ID	54		ng/L	22
009	6486-Dup 1	Aqueous	PFBA	PFAS by ID	220		ng/L	22
009	6486-Dup 1	Aqueous	PFOA	PFAS by ID	10		ng/L	22

(67 detections)

PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-001**

Description: **6486-MW1** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0920**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1408	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		15	3.7	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.1**		**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.2**	**J**	**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.8**	**J**	**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.1**	**J**	**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**6.3**		**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.0**		**3.7**	**0.92**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.92	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.3**		**3.7**	**0.92**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		118	25-150
13C2_6:2FTS		110	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		109	25-150
13C2_PFHxDA		100	25-150
13C2_PFTeDA		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-001**

Description: **6486-MW1** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0920**

Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		110	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		116	25-150
13C4_PFBA		115	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		116	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		113	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		122	10-150
13C9_PFNA		107	25-150
d-EtFOSA		98	10-150
d5-EtFOSAA		106	25-150
d9-EtFOSE		101	10-150
d-MeFOSA		100	10-150
d3-MeFOSAA		120	25-150
d7-MeFOSE		110	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-002**

Description: **6486-MW2** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0905**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1418	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	4.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**69**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**18**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**220**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.2**	**J**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**28**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**41**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**75**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**34**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**11**		**4.1**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		109	25-150
13C2_6:2FTS		104	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		70	25-150
13C2_PFTeDA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics**
Laboratory ID: **VL31055-002**
Description: **6486-MW2**
Matrix: **Aqueous**
Date Sampled: **12/29/2020 0905**
Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		108	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		119	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		110	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		107	25-150
d-EtFOSA		81	10-150
d5-EtFOSAA		101	25-150
d9-EtFOSE		93	10-150
d-MeFOSA		85	10-150
d3-MeFOSAA		112	25-150
d7-MeFOSE		101	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-003**

Description: **6486-MW5** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0850**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1429	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	3.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**9.9**		**3.9**	**0.98**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**32**		**3.9**	**0.98**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**7.4**		**3.9**	**0.98**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**8.9**		**3.9**	**0.98**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.4**	**J**	**3.9**	**0.98**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**19**		**3.9**	**0.98**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.5**		**3.9**	**0.98**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**22**		**3.9**	**0.98**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	234	25-150
13C2_6:2FTS	N	214	25-150
13C2_8:2FTS	N	203	25-150
13C2_PFDoA		87	25-150
13C2_PFHxDA		51	25-150
13C2_PFTeDA		58	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-003**

Description: **6486-MW5** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0850**

Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		84	25-150
13C3_PFHxS		82	25-150
13C3-HFPO-DA		76	25-150
13C4_PFBA		50	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		80	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		94	25-150
13C8_PFOA		94	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		95	25-150
d-EtFOSA		88	10-150
d5-EtFOSAA		106	25-150
d9-EtFOSE		56	10-150
d-MeFOSA		92	10-150
d3-MeFOSAA		116	25-150
d7-MeFOSE		60	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-004**

Description: **6486-MW19R** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0725**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1554	SES	01/11/2021 1020	78998
2	SOP SPE	PFAS by ID SOP	5	01/14/2021 1531	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		15	3.8	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		15	3.8	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		15	3.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		15	3.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		15	3.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		15	3.8	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		15	3.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		15	3.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		15	3.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		15	3.8	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		15	3.8	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		31	7.6	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		15	3.8	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		15	3.8	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**830**		**7.6**	**1.9**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**8.9**		**7.6**	**1.9**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		15	3.8	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**6.5**	**J**	**7.6**	**1.9**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1000**		**38**	**9.5**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**31**		**7.6**	**1.9**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		15	3.8	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**34**		**7.6**	**1.9**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**5.9**	**J**	**7.6**	**1.9**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		15	3.8	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**52**		**7.6**	**1.9**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**40**		**7.6**	**1.9**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**16**		**7.6**	**1.9**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		94	25-150		113	25-150
13C2_6:2FTS		62	25-150		100	25-150
13C2_8:2FTS		49	25-150		98	25-150
13C2_PFDoA		33	25-150		84	25-150
13C2_PFHxDA		32	25-150		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics**
Laboratory ID: **VL31055-004**
Description: **6486-MW19R**
Matrix: **Aqueous**
Date Sampled: **12/29/2020 0725**
Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_PFTeDA		25	25-150		88	25-150
13C3_PFBS		57	25-150		101	25-150
13C3_PFHxS		58	25-150		101	25-150
13C3-HFPO-DA		61	25-150		100	25-150
13C4_PFBA		42	25-150		100	25-150
13C4_PFHpA		62	25-150		98	25-150
13C5_PFHxA		62	25-150		93	25-150
13C5_PFPeA		59	25-150		99	25-150
13C6_PFDA		52	25-150		89	25-150
13C7_PFUdA		38	25-150		94	25-150
13C8_PFOA		57	25-150		91	25-150
13C8_PFOS		49	25-150		91	25-150
13C8_PFOSA		60	10-150		97	10-150
13C9_PFNA		57	25-150		98	25-150
d-EtFOSA		39	10-150		103	10-150
d5-EtFOSAA		40	25-150		100	25-150
d9-EtFOSE		25	10-150		88	10-150
d-MeFOSA		49	10-150		91	10-150
d3-MeFOSAA		44	25-150		101	25-150
d7-MeFOSE		29	10-150		95	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-005**

Description: **6486-MW20R** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0930**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1450	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	3.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**40**		**3.9**	**0.97**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**180**		**3.9**	**0.97**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**10**		**3.9**	**0.97**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.97	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	0.97	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	177	25-150
13C2_6:2FTS	N	234	25-150
13C2_8:2FTS		130	25-150
13C2_PFDoA		58	25-150
13C2_PFHxDA	N	19	25-150
13C2_PFTeDA		30	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-005**

Description: **6486-MW20R** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0930**

Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		57	25-150
13C3_PFHxS		72	25-150
13C3-HFPO-DA		45	25-150
13C4_PFBA	N	22	25-150
13C4_PFHpA		58	25-150
13C5_PFHxA		42	25-150
13C5_PFPeA		28	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		79	25-150
13C8_PFOA		82	25-150
13C8_PFOS		78	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		87	25-150
d-EtFOSA		58	10-150
d5-EtFOSAA		80	25-150
d9-EtFOSE		34	10-150
d-MeFOSA		70	10-150
d3-MeFOSAA		87	25-150
d7-MeFOSE		52	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-006**

Description: **6486-MW21** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0825**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1501	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	4.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**89**		**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.6**	**J**	**4.0**	**0.99**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.4**	**J**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**150**		**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.8**	**J**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.0**		**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**9.8**		**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.7**	**J**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		124	25-150
13C2_6:2FTS		93	25-150
13C2_8:2FTS		79	25-150
13C2_PFDoA		78	25-150
13C2_PFHxDA		60	25-150
13C2_PFTeDA		70	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-006**

Description: **6486-MW21** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0825**

Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		87	25-150
13C3_PFHxS		80	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		57	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		99	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		82	25-150
13C8_PFOA		92	25-150
13C8_PFOS		67	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		89	25-150
d-EtFOSA		88	10-150
d5-EtFOSAA		77	25-150
d9-EtFOSE		77	10-150
d-MeFOSA		91	10-150
d3-MeFOSAA		87	25-150
d7-MeFOSE		84	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-007**

Description: **6486-MW22** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0920**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1512	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	4.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**26**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.9**	**J**	**4.1**	**1.0**	**ng/L**	**1**
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**7.3**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**83**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**19**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**22**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**60**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**12**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**53**		**4.1**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		98	25-150
13C2_6:2FTS		98	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		91	25-150
13C2_PFHxDA		57	25-150
13C2_PFTeDA		70	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-007**

Description: **6486-MW22** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0920**

Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		100	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		56	25-150
13C4_PFHpA		97	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		93	25-150
13C8_PFOA		100	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		95	25-150
d-EtFOSA		98	10-150
d5-EtFOSAA		92	25-150
d9-EtFOSE		71	10-150
d-MeFOSA		109	10-150
d3-MeFOSAA		103	25-150
d7-MeFOSE		82	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-008**

Description: **6486-MW28R** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0815**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1522	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		14	3.6	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**14**		**3.6**	**0.89**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**43**		**3.6**	**0.89**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.4**		**3.6**	**0.89**	**ng/L**	**1**
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**8.0**		**3.6**	**0.89**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.3**	**J**	**3.6**	**0.89**	**ng/L**	**1**
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**16**		**3.6**	**0.89**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**7.1**		**3.6**	**0.89**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.89	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**9.5**		**3.6**	**0.89**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	217	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		80	25-150
13C2_PFHxDA		67	25-150
13C2_PFTeDA		65	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-008**

Description: **6486-MW28R** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0815**

Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		85	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		82	25-150
13C8_PFOA		97	25-150
13C8_PFOS		74	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		94	25-150
d-EtFOSA		89	10-150
d5-EtFOSAA		86	25-150
d9-EtFOSE		78	10-150
d-MeFOSA		88	10-150
d3-MeFOSAA		92	25-150
d7-MeFOSE		82	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-009**

Description: **6486-Dup 1** Matrix: **Aqueous**

Date Sampled: **12/29/2020**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1533	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		19	4.8	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**54**		**4.8**	**1.2**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**220**		**4.8**	**1.2**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		9.7	2.4	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**10**		**4.8**	**1.2**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.8	1.2	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.8	1.2	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	162	25-150
13C2_6:2FTS	N	227	25-150
13C2_8:2FTS		130	25-150
13C2_PFDoA		50	25-150
13C2_PFHxDA	N	20	25-150
13C2_PFTeDA	N	23	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics**
Laboratory ID: **VL31055-009**
Description: **6486-Dup 1**
Matrix: **Aqueous**
Date Sampled: **12/29/2020**
Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		55	25-150
13C3_PFHxS		68	25-150
13C3-HFPO-DA		44	25-150
13C4_PFBA		25	25-150
13C4_PFHpA		55	25-150
13C5_PFHxA		41	25-150
13C5_PFPeA		29	25-150
13C6_PFDA		84	25-150
13C7_PFUdA		77	25-150
13C8_PFOA		75	25-150
13C8_PFOS		84	25-150
13C8_PFOSA		83	10-150
13C9_PFNA		81	25-150
d-EtFOSA		43	10-150
d5-EtFOSAA		76	25-150
d9-EtFOSE		41	10-150
d-MeFOSA		47	10-150
d3-MeFOSAA		84	25-150
d7-MeFOSE		54	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-010**

Description: **6486-FRB-1** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0725**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1440	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		11	2.7	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		11	2.7	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		11	2.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		11	2.7	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		11	2.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		11	2.7	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		11	2.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		11	2.7	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		11	2.7	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		11	2.7	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		11	2.7	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		22	5.4	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		11	2.7	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		11	2.7	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		11	2.7	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		11	2.7	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		11	2.7	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		5.4	1.4	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		5.4	1.4	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		98	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		95	25-150
13C2_PFHxDA		74	25-150
13C2_PFTeDA		81	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics**
Laboratory ID: **VL31055-010**
Description: **6486-FRB-1**
Matrix: **Aqueous**
Date Sampled: **12/29/2020 0725**
Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		103	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		116	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		113	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		107	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		104	25-150
d-EtFOSA		64	10-150
d5-EtFOSAA		101	25-150
d9-EtFOSE		91	10-150
d-MeFOSA		59	10-150
d3-MeFOSAA		104	25-150
d7-MeFOSE		100	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-011**

Description: **6486-FRB-2** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0920**

Date Received: **12/31/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/13/2021 1605	SES	01/11/2021 1020	78998

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)	1691-99-2	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	PFAS by ID SOP	ND		16	3.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)	24448-09-7	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluorododecanesulfonic acid (PFDOS)	79780-39-5	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.98	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	0.98	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		109	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		105	25-150
13C2_PFHxDA		78	25-150
13C2_PFTeDA		88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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PFAS by LC/MS/MS

Client: **Enviroforensics** Laboratory ID: **VL31055-011**

Description: **6486-FRB-2** Matrix: **Aqueous**

Date Sampled: **12/29/2020 0920**

Date Received: **12/31/2020**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C3_PFBS		106	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		121	25-150
13C4_PFBA		113	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		113	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		116	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		111	25-150
d-EtFOSA		80	10-150
d5-EtFOSAA		104	25-150
d9-EtFOSE		102	10-150
d-MeFOSA		78	10-150
d3-MeFOSAA		110	25-150
d7-MeFOSE		101	10-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ78998-001
Batch: 78998
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/11/2021 1020

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	2.0	ng/L	01/12/2021 1329
11Cl-PF3OUdS	ND		1	8.0	2.0	ng/L	01/12/2021 1329
8:2 FTS	ND		1	8.0	2.0	ng/L	01/12/2021 1329
6:2 FTS	ND		1	8.0	2.0	ng/L	01/12/2021 1329
10:2 FTS	ND		1	8.0	2.0	ng/L	01/12/2021 1329
4:2 FTS	ND		1	8.0	2.0	ng/L	01/12/2021 1329
GenX	ND		1	8.0	2.0	ng/L	01/12/2021 1329
ADONA	ND		1	8.0	2.0	ng/L	01/12/2021 1329
EtFOSA	ND		1	8.0	2.0	ng/L	01/12/2021 1329
EtFOSAA	ND		1	8.0	2.0	ng/L	01/12/2021 1329
EtFOSE	ND		1	8.0	2.0	ng/L	01/12/2021 1329
MeFOSA	ND		1	16	4.0	ng/L	01/12/2021 1329
MeFOSAA	ND		1	8.0	2.0	ng/L	01/12/2021 1329
MeFOSE	ND		1	8.0	2.0	ng/L	01/12/2021 1329
PFBS	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFDS	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFHpS	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFNS	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFOSA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFPeS	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFDOS	ND		1	8.0	2.0	ng/L	01/12/2021 1329
PFHxS	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFBA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFDA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFDoA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFHpA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFHxDA	ND		1	8.0	2.0	ng/L	01/12/2021 1329
PFHxA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFNA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFODA	ND		1	8.0	2.0	ng/L	01/12/2021 1329
PFOA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFPeA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFTeDA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFTrDA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFUdA	ND		1	4.0	1.0	ng/L	01/12/2021 1329
PFOS	ND		1	4.0	1.0	ng/L	01/12/2021 1329

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		94	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		95	25-150
13C2_PFHxDA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ78998-001
Batch: 78998
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/11/2021 1020

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		93	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		111	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		101	25-150
13C8_PFOS		87	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		102	25-150
d-EtFOSA		95	10-150
d5-EtFOSAA		104	25-150
d9-EtFOSE		98	10-150
d-MeFOSA		105	10-150
d3-MeFOSAA		105	25-150
d7-MeFOSE		109	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ78998-002
Batch: 78998
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/11/2021 1020

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
9Cl-PF3ONS	15	18		1	121	50-150	01/12/2021 1340
11Cl-PF3OUdS	15	18		1	121	50-150	01/12/2021 1340
8:2 FTS	15	15		1	98	50-150	01/12/2021 1340
6:2 FTS	15	17		1	114	50-150	01/12/2021 1340
10:2 FTS	15	17		1	109	50-150	01/12/2021 1340
4:2 FTS	15	14		1	94	50-150	01/12/2021 1340
GenX	32	33		1	103	50-150	01/12/2021 1340
ADONA	15	16		1	108	50-150	01/12/2021 1340
EtFOSA	16	15		1	94	50-150	01/12/2021 1340
EtFOSAA	16	16		1	102	50-150	01/12/2021 1340
EtFOSE	16	14		1	90	50-150	01/12/2021 1340
MeFOSA	16	19		1	117	50-150	01/12/2021 1340
MeFOSAA	16	16		1	102	50-150	01/12/2021 1340
MeFOSE	16	16		1	102	50-150	01/12/2021 1340
PFBS	14	14		1	96	50-150	01/12/2021 1340
PFDS	15	19		1	122	50-150	01/12/2021 1340
PFHpS	15	17		1	109	50-150	01/12/2021 1340
PFNS	15	18		1	119	50-150	01/12/2021 1340
PFOSA	16	18		1	110	50-150	01/12/2021 1340
PFPeS	15	16		1	107	50-150	01/12/2021 1340
PFDOS	15	19		1	123	50-150	01/12/2021 1340
PFHxS	15	14		1	97	50-150	01/12/2021 1340
PFBA	16	17		1	104	50-150	01/12/2021 1340
PFDA	16	17		1	107	50-150	01/12/2021 1340
PFDoA	16	17		1	107	50-150	01/12/2021 1340
PFHpA	16	17		1	109	50-150	01/12/2021 1340
PFHxDA	16	17		1	106	50-150	01/12/2021 1340
PFHxA	16	17		1	107	50-150	01/12/2021 1340
PFNA	16	17		1	107	50-150	01/12/2021 1340
PFODA	16	18		1	110	50-150	01/12/2021 1340
PFOA	16	17		1	104	50-150	01/12/2021 1340
PFPeA	16	16		1	102	50-150	01/12/2021 1340
PFTeDA	16	16		1	97	50-150	01/12/2021 1340
PFTrDA	16	17		1	109	50-150	01/12/2021 1340
PFUdA	16	15		1	93	50-150	01/12/2021 1340
PFOS	15	17		1	114	50-150	01/12/2021 1340

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		91	25-150
13C2_6:2FTS		97	25-150
13C2_8:2FTS		88	25-150
13C2_PFDoA		85	25-150
13C2_PFHxDA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ78998-002
Batch: 78998
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/11/2021 1020

Surrogate	Q	% Rec	Acceptance Limit
13C2_PFTeDA		87	25-150
13C3_PFBS		89	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		94	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		91	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		86	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		92	25-150
13C8_PFOS		77	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		92	25-150
d-EtFOSA		91	10-150
d5-EtFOSAA		90	25-150
d9-EtFOSE		93	10-150
d-MeFOSA		94	10-150
d3-MeFOSAA		97	25-150
d7-MeFOSE		96	10-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

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www.pacelabs.com

Number L15255

Client: Enviro Forensics, LLC	Report to Contact: Wayne Feggbender	Telephone No. / E-mail: 262-490-6472 wfeggbender@enviroforensics.com
Address: N16W23390 Stoneridge Drive	Sampler's Signature: X [signature]	Analysis (Attach list if more space is needed): 16 WDNR PFAS Compounds
City: Waukesha	State: WI Zip Code: 53188	Printed Name:
Project Name: Albany		
Project No: 6486	P.O. No.	

VL31055
KLC2

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Soil/Solid	Non-Aqueous	No of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Other (Specify)	PFAS	Remarks / Cooler I.D.
6486-MW 1	12/29/20	0920		X			X							X	
6496-MW 2	11	0905		X			X							X	
6486-MW 5	11	0850		X			X							X	
6486-MW 19R	11	0725		X			X							X	
6486-MW 20R	11	0930		X			X							X	
6486-MW 21	11	0825		X			X							X	
6486-MW 22	11	0920		X			X							X	
6486-MW 28R	11	0815		X			X							X	
6486-DUP 1	11	—		X			X							X	
6486-FRB-1	11	0725		X			X							X	
6486-FRB-2		0920													

Turn Around Time Required (Prior lab approval required for expedited TAT.): X Standard ☐ Rush (Specify)

Sample Dispose: ☐ Return to Client X Disposal by Lab

Possible Hazard Identification: X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify): Level 2

	Date	Time		Date	Time
1. Relinquished by: [signature]	12-29-20	16:00	1. Received by: FedEx	12-29-20	16:00
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date 12/31/20	Time 1055	4. Laboratory received by: [signature]	Date 12/31/20	Time 1055

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle): (Yes) No Ice Pack Receipt Temp: 3.2 °C
Temp Blank: ☑ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME033N2-01

PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Enviro Forensics Cooler Inspected by/date: KBS / 12/31/20 Lot #: VL31055

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: na Chlorine Strip ID: na Tested by: na

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: na

3.2 / 3.2 °C na / na °C na / na °C na / na °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☐ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? na
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # na

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) na were received incorrectly preserved and were adjusted accordingly in sample receiving with na mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # na.
Time of preservation na. If more than one preservative is needed, please note in the comments below.

Sample(s) na were received with bubbles >6 mm in diameter.

Samples(s) na were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: na.

SR barcode labels applied by: KBS Date: 12/31/20

Comments: