

April 25, 2023

Project Reference #11516

Mr. Joseph Martinez
Wisconsin Department of Natural Resources
1027 W. St. Paul Avenue
Milwaukee, WI 53233
Via email: Joseph.Martinez@wisconsin.gov

**Subject: Emerging Contaminants Evaluation
Former Try-Chem Corp
1333 West Pierce Street, Milwaukee, WI 53204
BRRTS #02-41-409441**

Dear Mr. Martinez:

The Sigma Group, Inc. (Sigma), on behalf of The Redevelopment Authority of the City of Milwaukee (RACM), is submitting this report documenting the emerging contaminant evaluation completed for the Former Try-Chem Corp property located at 1333 West Pierce Street, Milwaukee, Wisconsin (hereinafter, referred to as the "Site"). Pursuant to the recommendations provided in Sigma's letter report¹ submitted following completion of the initial assessment of the emerging contaminants at the site, and the receipt of WDNR concurrence to implement the recommended activities (email from Joseph Martinez, dated July 5, 2022) a second round of groundwater sampling was performed in November 2022 to further evaluate the degree and extent of emerging contaminants in the subsurface. The following sections present a summary of the site background and the results of the investigation activities.

BACKGROUND

Historically, the Site was occupied by manufacturing facilities which conducted paint stripping, electroplating, painting, and metal finishing services. Between 1916 through 1985 the Site was owned by Try-Chem Corporation (TCC), until 1985, when TCC filed for bankruptcy and abandoned the Site.

In 1983, the WDNR and the City of Milwaukee (COM) observed illegally disposed hazardous waste at the Site and observed several unlined pits in the main building. In 1986, WDNR referred the Site to the Environmental Protection Agency (EPA) for further site assessment and cleanup to would mitigate potential threats to human health and the environment.

In 1987, the EPA conducted cleanup activities which include the removal of approximately 13,750 gallons of liquid waste, more than 12 tons of solid waste, and four roll off boxes of crushed drums, contaminated soil and miscellaneous debris from the Site. Following Site cleanup activities, the Ecology and Environmental, Inc. (E&E) performed a site assessment activity under the direction of the EPA to evaluate the soil and groundwater impacts resulting from the disposal of hazardous waste at the Site.

¹ Sigma letter report titled "Emerging Contaminant Investigation Summary Report, Former Try-Chem Corp, 1333 West Pierce Street, Milwaukee, WI 53204", dated February 3, 2022.

Investigation activities completed at the site between 1989 and 2002 by Sigma and others indicated that site soils were impacted with elevated concentrations of select volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and Resource Conservation and Recovery Act (RCRA) metals, with limited areas impacted with polychlorinated biphenyls (PCBs), pesticides, and cyanide. Site groundwater was noted to be impacted by elevated concentrations of select chlorinated volatile organic compounds (CVOCs), arsenic, and cyanide. Select CVOCs were identified as the main contaminants of concern.

Based on the presence of soil and groundwater impacts exceeding WDNR standards, a two-foot clean clay engineered barrier was constructed in 2013 for purposes of eliminating the potential for direct contact associated with residually impacted soil and to limit additional release of residual impacts to the groundwater via infiltration of precipitation. Groundwater monitoring has been conducted on a periodic basis since 2013 to evaluate the impact of the low permeability cap and natural attenuation processes.

Following completion of the site investigation, cap construction, and natural attenuation monitoring, Sigma submitted a Case Closure report in November 2019 which summarized the site investigation and remedial activities and recommended conditional case closure. The WDNR responded in a letter in March 2020 requesting additional site information, specifically emerging contaminants and hexavalent chromium evaluation to support the case closure request.

In response to the WDNR's letter, in October 2020 Sigma completed a hexavalent chromium investigation which included the installation of new groundwater monitoring wells and the collection of soil and groundwater samples for laboratory analysis of hexavalent chromium. Hexavalent chromium was detected within four soil samples collected from three soil boring locations. The detected concentrations were slightly above the non-industrial direct contact RCL but below the industrial direct contact RCL. The soil borings were located in the vicinity of the historical process operations and were likely associated with the historic electroplating activities. No hexavalent chromium was detected within the groundwater samples collected.

In June 2021 Sigma completed a desktop evaluation of emerging contaminants to evaluate the likelihood of a release of emerging contaminants at the site. Based on Sigma's assessment of potential historical fires, historical Site activities, and Site data, it was concluded that 1,4-dioxane and/or PFAS compounds may have been released on the Site. Therefore, further evaluation of emerging contaminants, including sampling of environmental media at the Site, is required prior to case closure.

EMERGING CONTAMINANT INVESTIGATION ACTIVITIES

Previous Emerging Contaminants Investigation Activities

Sigma submitted the report titled "*Emerging Contaminants Investigation Summary Report*" dated February 3, 2022, to the WDNR, which documented the emerging contaminants investigation activities completed at the Site. The subsurface investigation included advancing four soil borings (SB-21R, SB-23R, SB-25R, and SB-27R) to depths of 15-feet below ground surface (bgs) and the installation of four small-diameter monitoring wells MW-12R, MW-13R, MW-14, and MW-15 in the soil borings SB-21R, SB-23R, SB-25R, and SB-27R respectively, as shown on **Figure 1**.

Soil Quality Results. A total of eight samples were submitted for laboratory analysis of perfluoroalkyl and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. Based on the laboratory analytical results select PFAS constituents PFOS and 6:2 FTSA were detected within one sample, however, this sample was collected at the observed water table interface.

Groundwater Quality Results. Sigma submitted five groundwater samples for laboratory analysis of PFAS (the WDNR list of 33 PFAS compounds) and 1,4-dioxane. Based on laboratory analytical results, 1,4-dioxane was detected at concentrations greater than the ch. NR 140 Preventative Action Limits (PALs) and select PFAS constituents (PFOA and PFOS) were detected at concentrations greater than the recommended WDHS PALs and/or Enforcement Standards (ESs). Based on a review of the collected data Sigma recommended a second round of groundwater sampling from monitoring wells MW-12R, MW-13R, MW-14, MW-15, and two additional wells located downgradient near the northern property boundary (MW-2A and MW-2R) for downgradient plume evaluation.

Second Round of Emerging Contaminants Sampling Activities

In November 2022, Sigma completed a second round of groundwater sampling for further evaluation of emerging contaminants (PFAS and 1,4-Dioxane) and Hexavalent Chromium from six monitoring wells on site. One sample each from four monitoring wells previously sampled (MW-12R, MW-13R, MW-14, and MW-15) and one sample each from two additional monitoring wells (MW-2A and MW-2R previously not sampled for emerging contaminants) located near the downgradient edge of the property were collected for further delineation of the subsurface impacts. A duplicate sample and an equipment blank were collected for QA/QC purposes. The sampling activities and results are summarized as follows.

Groundwater Sampling. On November 7, 2022, Sigma staff mobilized to the site and initiated sampling activities. Prior to site mobilization the sampling staff took the necessary steps to prepare for special handling and care needed for PFAS sampling to minimize possible cross-contamination or outside interferences during sampling and followed Sigma's standard operating procedures for PFAS sampling (SOP#7 included as **Appendix 1**). Once on-site the sampling staff measured the depth to groundwater and the bottom of the monitoring wells with an electronic water level indicator relative to the top of the PVC casing. Each well was then purged four times the borehole volume and left to recharge overnight. On November 8, 2023 groundwater samples were collected from each monitoring wells using a peristaltic pump (utilizing low-flow sampling techniques to limit sediment infiltration in the sample) with new tubing at each well. The groundwater samples were placed into laboratory-supplied glass vials, stored in a cooler with ice, and submitted to the laboratory for analysis of PFAS (the WDNR list of 33 PFAS compounds), 1,4-dioxane, and Hexavalent Chromium.

Additionally, one duplicate groundwater sample was collected from MW-13R and submitted for QA/QC purposes. Duplicate and equipment blank samples were collected and submitted for PFAS and 1,4-dioxane analysis and a trip blank sample was also submitted for 1,4-dioxane analysis. The duplicate groundwater samples were collected to determine laboratory precision. The equipment blank and trip blank samples were analyzed to determine if contaminants infiltrated the samples during field procedure or transportation, respectively.

Investigative Waste. Purge groundwater generated during groundwater sampling field procedures was containerized in a 55-gallon drum, properly labeled, and staged on site until proposer disposal could be

coordinated. The drum of purge water was picked up by Clean Harbors Environmental, on November 30, 2022. The transportation/disposal Bills of Lading (BOLs) are included in **Attachment 2**.

INVESTIGATION RESULTS

Hydrogeology. Water level measurements collected on November 7, 2022 at each of the monitoring wells sampled were consistent with previous measurements and ranged from approximately three feet bgs (MW-12R) to seven feet bgs (MW-2A). Based on the measured depth to groundwater the shallow groundwater is interpreted to flow to the north following local topography towards the Menomonee River Valley. The groundwater elevation data is presented on **Table 1** and the groundwater flow map is presented on **Figure 2**.

Groundwater Quality Results. The laboratory analytical data for the groundwater samples are summarized in **Table 2** for PFAS compounds and **Table 3** for 1,4-dioxane and Chromium. The data tables also include the recommended Wisconsin Department of Health Services (WDHS) Preventative Action Limits (PALs) and Enforcement Standards (ESs) for the PFAS compounds and Wisconsin Administrative Code ch. NR 140 PALs and ESs for the 1,4-dioxane and chromium. It is noted that only 17 of the 33 PFAS compounds have recommended WDHS PALs / ESs.

A review of the data indicates the following:

- No detections of hexavalent chromium were reported in any of the groundwater samples analyzed.
- No detection of 1,4-Dioxane was reported within the groundwater sample collected from monitoring well MW-15. Concentrations of 1,4-Dioxane greater than ch. NR 140 PALs were detected within the groundwater samples collected from monitoring wells MW-2A, MW-2R, MW-13R, and MW-14. The concentration of 1,4-dioxane was detected within one groundwater sample collected from MW-12R and was reported just greater than its Ch. NR 140 ES.
- Select PFAS constituents (PFOA and PFOS) were detected at concentrations greater than the recommended WDHS PALs within monitoring wells MW-2R, MW-12R, MS-13R, MW-14, and MW-15. Concentrations of PFOA within monitoring wells MW-2A, MW-13R and MW-14 were reported greater than recommended WDHS ESs. Concentration of FOSA was detected within a groundwater sample from monitoring well MW-2A at the recommended WDHS PAL.
- Each of the PFAS constituents and 1,4-dioxane were reported below the LODs in the equipment blank samples, and 1,4-dioxane was reported below the LOD in the trip blank sample.

Attached **Figure 3** presents the groundwater quality map and copies of the groundwater laboratory analytical reports are included as **Attachment 3**.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the site investigation activities completed to evaluate hexavalent chromium, 1,4-Dioxane, and PFAS contaminants the following conclusions are provided:

- Relatively low concentrations of hexavalent chromium soil impacts were identified in the subsurface beneath the engineered cap. The low-level impacted areas are associated with the historical process operations at the site.
- Subsurface impacts of 1,4-Dioxane are well below ch. NR 720 direct contact RCLs for soil and at or below ch. NR140 groundwater enforcement standard.
- Select PFAS constituents (PFOS and 6:2 FTSA) were detected within one soil sample collected at the water table interface. None of the detected PFOS concentrations were reported greater than their respective ch. NR 720 RCLs.
- Select PFAS constituents were detected in groundwater at concentrations greater than the recommended WDHS PALs and ESs at various locations across the Site; and,
- The relatively higher concentrations of PFOS were identified within the downgradient monitoring wells MW-2A and MW-2/2R located near the northern property boundary.

A two-foot clean clay engineered barrier was constructed in 2013 for purposes of eliminating the potential for direct contact associated with residually impacted soil and to limit additional release of residual impacts to the groundwater via infiltration of precipitation. Considering the presence of the engineered clay cap, the absence of sources of impact at the site and relatively low PFAS impacts in groundwater no additional investigation or remediation is recommended.

Sigma anticipates that regulatory case closure will be appropriate for the Site and a revised case closure request package will be prepared with WDNR Form 4400-202 and submitted for regulatory review. Required operation and maintenance plans for the cap for continuing obligations will be prepared and submitted for WDNR review and approval.

If you have any questions or need additional information, please call us at (414) 643-4200.

Sincerely,

THE SIGMA GROUP, INC.



Mafizul Islam, P.E.
Senior Engineer



Kristin Kurzka, P.E., P.G
Geoscience Group Leader

Cc: Mathew Reimer - City of Milwaukee
List of Attachments:

Table 1 – Water Level Elevations

Table 2 – Groundwater Analytical Table – PFAS

Table 3 – Groundwater Analytical Table – 1,4-Dioxane & Hexavalent Chromium

Figure 1 – Borehole Location Map with Approximate Historic Process Locations

Figure 2 – Groundwater Flow Map

Figure 3 – Groundwater Isoconcentration Map

Attachment 1 – Sigma SOP #7: Emerging Contaminant Sampling Protocol

Attachment 2 – Bill of Lading – Clean Harbors

Attachment 3 – Groundwater Laboratory Analytical Reports

TABLES

Table 1
Water Level Elevations
1333 West Pierce Street, Milwaukee, Wisconsin
Sigma Project No. 11516

MW-2A							
Ground Elev.:		611.14 (feet MSL)		Screen Interval:		5.1 to 15.1 (feet bgs)	
TOC Elev.:		611.21 (feet MSL)				606.0 to 596.0 (feet MSL)	
Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet MSL)	Depth to Groundwater (feet bgs)	Physical Observations
10/1/96	6.72	15.00	8.28	NA	604.49	6.65	
4/18/12	7.02	15.20	8.18	-0.10	604.19	6.95	
10/12/12	7.20	15.20	8.00	-0.18	604.01	7.13	
4/15/13	6.81	15.20	8.39	0.39	604.40	6.74	
10/11/13	7.15	15.20	8.05	-0.34	604.06	7.08	
6/3/14	7.14	15.20	8.06	0.01	604.07	7.07	
12/9/14	7.22	15.20	7.98	-0.08	603.99	7.15	Clear
7/13/15	7.24	15.20	7.96	-0.02	603.97	7.17	Clear
9/6/16	7.25	15.15	7.90	-0.06	603.96	7.18	Clear
5/1/18	7.09	14.95	7.86	-0.04	604.12	7.02	Clear, good recovery
3/8/19	7.14	14.95	7.81	-0.05	604.07	7.07	Clear, good recovery
10/22/20	7.13	14.90	7.77	-0.04	604.08	7.06	Mostly clear, no odor, good recovery.
11/7/22	7.09	14.95	7.86	0.09	604.12	7.02	clear, none, good,

MW-2R							
Ground Elev.:		614.16 (feet MSL)		Screen Interval:		7.8 to 17.8 (feet bgs)	
TOC Elev.:		613.76 (feet MSL)				606.4 to 596.4 (feet MSL)	
Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet MSL)	Depth to Groundwater (feet bgs)	Physical Observations
4/18/12	6.26	17.40	11.14	NA	607.50	6.66	
10/12/12	7.71	17.40	9.69	-1.45	606.05	8.11	
4/15/13	5.55	17.40	11.85	2.16	608.21	5.95	
10/11/13	8.11	17.40	9.29	-2.56	605.65	8.51	
6/3/14	7.57	17.40	9.83	0.54	606.19	7.97	
12/9/14	7.79	17.40	9.61	-0.22	605.97	8.19	Clear
7/13/15	7.98	17.40	9.42	-0.19	605.78	8.38	Clear
1/11/16	6.51	17.40	10.89	1.47	607.25	6.91	Clear
9/6/16	7.89	17.40	9.51	-1.38	605.87	8.29	Clear
5/1/18	6.61	17.15	10.54	1.03	607.15	7.01	
3/8/19	7.41	17.15	9.74	-0.80	606.35	7.81	Clear, moderate recovery
10/22/20	7.72	17.15	9.43	-0.31	606.04	8.12	Mostly clear, no odor, moderate recovery.
11/7/22	6.69	17.20	10.51	1.08	607.07	7.09	clear, none, slow,

MW-12/12R							
Ground Elev.:		615.58 (feet MSL)		NEW Ground Elev.:		615.67 (feet bgs)	
TOC Elev.:		616.11 (feet MSL)		NEW TOC Elev.:		615.40 (feet MSL)	
				Screen Interval:		4.8 to 14.8 (feet bgs)	
						610.9 to 600.9 (feet MSL)	
Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet MSL)	Depth to Groundwater (feet bgs)	Physical Observations
10/22/20	4.15	14.75	10.60	NA	611.96	3.63	Slightly turbid, no odor, slow recovery.
4/30/21	4.18	14.27	10.09	-0.51	611.93	3.66	
11/1/21	3.84	13.80	9.96	-0.34	612.27	3.32	Missing well casing
11/5/21	3.70	14.55	10.85	-0.14	611.70	3.97	Well replaced on 11/3/21 due to damage.
11/8/21	3.71	14.52	10.81	0.01	611.69	3.98	Clear, no odor, good recovery.
11/7/22	3.29	14.50	11.21	-0.42	612.11	3.56	turbid, none, slow,

MW-13/13R							
Ground Elev.:		617.83 (feet MSL)		NEW Ground Elev.:		617.88 (feet bgs)	
TOC Elev.:		618.42 (feet MSL)		NEW TOC Elev.:		617.60 (feet MSL)	
				Screen Interval:		3.7 to 13.7 (feet bgs)	
						614.2 to 604.2 (feet MSL)	
Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet MSL)	Depth to Groundwater (feet bgs)	Physical Observations
10/22/20	6.54	14.75	8.21	NA	611.88	5.95	Slightly turbid, no odor, slow recovery.
4/30/21	6.34	14.74	8.40	0.19	612.08	5.75	
11/1/21	5.98	14.15	8.17	-0.23	612.44	5.39	Missing well casing
11/5/21	5.85	13.40	7.55	-0.62	611.75	6.13	Well replaced on 11/3/21 due to damage.
11/8/21	5.81	12.95	7.14	-0.41	611.79	6.09	Clear, no odor, good recovery.
11/7/22	5.31	12.95	7.64	0.50	612.29	5.59	clear, none, good,

MW-14							
Ground Elev.:		615.74 (feet MSL)		Screen Interval:		4.5 to 14.5 (feet bgs)	
TOC Elev.:		615.49 (feet MSL)				611.2 to 601.2 (feet MSL)	
Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet MSL)	Depth to Groundwater (feet bgs)	Physical Observations
11/5/21	6.71	14.25	7.54	NA	608.78	6.97	Well development.
11/8/21	6.78	14.22	7.44	-0.10	608.71	7.04	Clear, no odor, going dry.
11/7/22	4.58	13.55	8.97	1.53	610.91	4.84	Mostly clear, none, slow,

MW-15							
Ground Elev.:		617.31 (feet MSL)		Screen Interval:		3.6 to 13.6 (feet bgs)	
TOC Elev.:		617.16 (feet MSL)				613.7 to 603.7 (feet MSL)	
Date	Depth to Groundwater (feet TOC)	Well Depth (feet TOC)	Water Column (feet)	Water Column Difference (feet)	Groundwater Elevation (feet MSL)	Depth to Groundwater (feet bgs)	Physical Observations
11/5/21	4.93	13.45	8.52	NA	612.23	5.08	Well development.
11/8/21	4.86	13.09	8.23	-0.29	612.30	5.01	Clear, no odor, fair recovery.
11/7/22	6.00	14.25	8.25	0.02	611.16	6.15	clear, none, moderate,

Notes:

1. All monitoring wells surveyed by The Sigma Group, Inc. on June 7, 2012 with Trimble R8 receiver. Monitoring wells MW-12 and MW-13 surveyed by Sigma on October 14, 2020 following installation. Monitoring wells MW-12R, MW-13R, MW-14, and MW-15 surveyed by Sigma on November 3, 2021 following installation.
2. feet MSL = feet above Mean Sea Level
3. feet bgs = feet below ground surface
4. feet TOC = feet below top of casing

**Table 2
Groundwater Analytical Results - PFAS
Try-Chem - 1333 W Pierce St, Milwaukee, Wisconsin
Sigma Project No. 11516**

Well Location:	MW-2A	MW-2/2R	MW-12R			MW-13R			MW-14		MW-15		RECOMMENDED WDHS ES	RECOMMENDED WDHS PAL	
	Date:	11/08/2022	11/08/2022	11/8/21	11/8/21	11/08/2022	11/8/21	11/8/22	11/8/22	11/8/21	11/08/2022	11/8/21			11/08/2022
Water Elevation* (feet MSL):	604.12	607.07	611.69*	DUP	612.11	611.79	612.29	DUP	608.71	610.91	612.30	611.16			
PFAS															
<i>Carboxylic Acids</i>															
Perfluorobutanoic acid (PFBA)	ng/L	11	24	7.5	6.1	<2.4	12	11	11	8.4	9.6	5.8	5.9	10,000	2,000
Perfluoropentanoic acid (PFPeA)	ng/L	17	11	12	11	10	27	26	25	<0.54	15	8.7	8.6	NS	NS
Perfluorohexanoic acid (PFHxA)	ng/L	14	3.4	11	8.4	4.6	21	19	20	11	9.2	6.9	7.5	150,000	30,000
Perfluoroheptanoic acid (PFHpA)	ng/L	5.0	1.8 J	4.6 J	3.6 J	2.7	8.2	9.4	9.7	4.4	3.6	3.5 J	4.3	NS	NS
Perfluorooctanoic acid (PFOA)	ng/L	29	5.5	15	12	7.8	39	48	46	34	18	14	18	20	2
Perfluorononanoic acid (PFNA)	ng/L	0.82 J	0.92 J	1.4 J	1.2 J	0.66 J	<0.49	<0.26	0.29 J	0.71 J	0.38 J	1.1 J	1.2 J	30	3
Perfluorodecanoic acid (PFDA)	ng/L	<0.28	0.82J	<0.65	<0.52	<0.30	<0.55	<0.29	<0.30	<0.52	<0.29	<0.51	<0.29	300	60
Perfluoroundecanoic acid (PFUnA)	ng/L	<0.99	<1.0	<0.78	<0.62	<1.1	<0.66	<1.0	<1.0	<0.62	<1.0	<0.61	<1.0	3,000	600
Perfluorododecanoic acid (PFDoA)	ng/L	<0.50	<0.51	<0.59	<0.47	<0.54	<0.50	<0.52	<0.52	<0.46	<0.52	<0.46	<0.52	500	100
Perfluorotridecanoic acid (PFTrDA)	ng/L	<1.2	<1.2	<0.66	<0.53	<1.3	<0.56	<1.2	<1.2	<0.52	<1.2	<0.51	<1.2	NS	NS
Perfluorotetradecanoic acid (PFTA)	ng/L	<0.66	<0.68	<0.75	<0.60	<0.72	<0.63	<0.69	<0.70	<0.59	<0.68	<0.58	<0.69	10,000	2,000
<i>Sulfonic Acids</i>															
Perfluorobutanesulfonic acid (PFBS)	ng/L	4.7	<0.19	2.1 J	1.6 J	7.2	1.8 J	0.94 J	0.81 J	1.8 J	5.7	0.84 J	0.84 J	450,000	90,000
Perfluoropentanesulfonic acid (PFPeS)	ng/L	4.1	4.1	0.81 J	<0.59	<0.29	<0.63	0.60 J	0.63 J	<0.58	3.6	<0.58	0.40 J	NS	NS
Perfluorohexanesulfonic acid (PFHxS)	ng/L	57	42	3.4 J	2.3 J	2.9	1.9 J	1.4 J	1.4 J	2.3 J	44	1.5 J	1.9	40	4
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	1.8	0.82 J	<0.62	<0.50	0.58 J	<0.53	<0.18	<0.18	<0.49	1.2 J	<0.48	<0.18	NS	NS
Perfluorooctanesulfonic acid (PFOS)	ng/L	140	130	18	13	42	8.9	4.0	4.9	13	98	5.4	2.0	20	2
Perfluorononanesulfonic acid (PFNS)	ng/L	<0.33	<0.34	<0.89	<0.71	<0.36	<0.75	<0.35	<0.35	<0.70	<0.35	<0.69	<0.35	NS	NS
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.29	<0.30	<0.97	<0.77	<0.31	<0.82	<0.30	<0.31	<0.77	<0.30	<0.75	<0.30	NS	NS
Perfluorododecanesulfonic acid (PFDoS)	ng/L	<0.87	<0.90	<1.3	<1.0	<0.95	<1.1	<0.92	<0.92	<1.0	<0.91	<1.0	<0.92	NS	NS
4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	ng/L	<0.22	<0.22	<1.1	<0.87	<0.24	<0.92	<0.23	<0.23	<0.86	<0.23	<0.85	<0.23	NS	NS
6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	ng/L	<2.3	<2.3	<2.5	<2.0	<2.4	<2.1	<2.4	<2.4	<2.0	<2.3	<1.9	<2.4	NS	NS
8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	ng/L	<0.41	<0.43	<2.0	<1.6	<0.45	<1.7	<0.44	<0.44	<1.6	<0.43	<1.6	<0.44	NS	NS
<i>Sulfonamides, Sulfonamidoacetic Acids, Sulfonamidoethanols</i>															
Perfluorooctane sulfonamide (FOSA)	ng/L	2.0	<0.91	<0.76	<0.61	<0.96	<0.65	<0.93	<0.93	<0.60	1.2J	<0.59	<0.93	20	2
N-Methyl perfluorooctane sulfonamide (NMeFOSA)	ng/L	<0.39	<0.40	<1.6	<1.3	<0.42	<1.3	<0.41	<0.41	<1.2	<0.40	<1.2	<0.41	NS	NS
N-Ethyl perfluorooctane sulfonamide (NEtFOSA)	ng/L	<0.78	<0.81	<1.7	<1.3	<0.85	<1.4	<0.83	<0.83	<1.3	<0.82	<1.3	<0.83	20	2
N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ng/L	<1.1	<1.1	<1.2	<0.93	<1.2	<0.98	<1.1	<1.1	<0.92	<1.1	<0.90	<1.1	NS	NS
N-Ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ng/L	<1.2	<1.2	<0.93	<0.75	<1.3	<0.79	<1.2	<1.2	<0.74	<1.2	<0.73	<1.2	20	2
N-Methyl perfluorooctane sulfonamidoethanol (NMeFOSE)	ng/L	<1.3	<1.3	<1.6	<1.3	<1.4	<1.4	<1.3	<1.3	<1.3	<1.3	<1.2	<1.3	NS	NS
N-Ethyl perfluorooctane sulfonamidoethanol (NEtFOSE)	ng/L	<0.77	<0.79	<1.2	<0.95	<0.83	<1.0	<0.81	<0.81	<0.94	<0.80	<0.92	<0.81	20	2
<i>Replacement Chemicals</i>															
Hexafluoropropylene oxide dimer acid (GenX, HPFO-DA)	ng/L	<1.4	<1.4	<2.6	<2.1	<1.5	<2.2	<1.4	<1.4	<2.0	<1.4	<2.0	<1.4	300	30
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	ng/L	<0.36	<0.37	<0.60	<0.48	<0.39	<0.51	<0.38	<0.38	<0.48	<0.38	<0.47	<0.38	3,000	600
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ng/L	<0.22	<0.22	<0.60	<0.48	<0.24	<0.51	<0.23	<0.23	<0.47	<0.23	<0.47	<0.23	NS	NS
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ng/L	<0.29	<0.30	<0.82	<0.66	<0.31	<0.70	<0.30	<0.31	<0.65	<0.30	<0.64	<0.30	NS	NS
Sum of FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS, and PFOA	ng/L	171	135.5	33	25	49.8	47.9	52	50.9	47	117.2	19.4	20	20	2

Notes:

- DHS ES = Groundwater Enforcement Standard recommendation (by Wisconsin Department of Health Services; Cycle 10 in June 2019 or Cycle 11 in November 2020)
- DHS PAL = Groundwater Preventative Action Limit recommendation (by Wisconsin Department of Health Services; Cycle 10 in June 2019 or Cycle 11 in November 2020)
- NS = no standard
- ng/L = nanograms per liter (equivalent to parts per trillion, ppt)
- Laboratory flags:
 - "J" = Analyte detected between Limit of Detection and Limit of Quantitation.
 - "I" = Analyte Value is an estimated maximum possible concentration (EMP)
- Equipment blank results:
 - 11/08/2021: All PFAS reported below laboratory detection limits.
 - 11/08/2022: All PFAS reported below laboratory detection limits.
- Exceedances:
 - BOLD** = Concentration exceeds DHS ES
 - ITALICS** = Concentration exceeds DHS PAL
- Special notes:
 - * = monitoring well screen submerged below water table
 - ** = not an NR 140 ES or PAL exceedance per NR 140.14(3)(c)

Data entered / updated by:
Data checked by:

JTZ
MMG

Date: 12/5/2022
Date: 12/8/2022

Table 3
Groundwater Analytical Table - 1,4-Dioxane & Hexavalent Chromium
1333 West Pierce Street, Milwaukee, Wisconsin
Sigma Project No. 11516

Well Location:	MW-2A		MW-2R		MW-4R	MW-12/12R				MW-13/13R			MW-14		MW-15		NR 140 ES	NR 140 PAL	
	Date:	10/22/20	11/08/2022	10/22/20	11/08/2022	10/22/20	10/22/20	11/08/21	11/08/2022	10/22/20	11/08/21	11/08/2022	11/08/21	11/08/2022	11/08/21	11/08/2022			
Water Elevation* (feet MSL):	604.08	604.12	606.04	607.07	607.77	611.96*	611.69*	DUP	612.11	611.88	611.79	612.29	608.71	610.91	612.30	611.16			
VOCs																			
1,4-Dioxane	µg/L	NA	2.8	NA	1.5	NA	NA	1.62	1.2	3.3	NA	2.14	2.3	0.584	0.36	<0.0469	<0.10	3	0.3
Dissolved Metals																			
Chromium	µg/L	<2.5	NA	<2.5	NA	<2.5	<2.5	NA	NA	NA	<2.5	NA	NA	NA	NA	NA	NA	100	10
Hexavalent Chromium	µg/L	<0.25	<3.2	<0.25	<3.2	<0.25	<0.25	NA	NA	<3.2	<0.25	NA	<3.2	NA	<3.2	NA	<3.2	NS	NS

Notes:

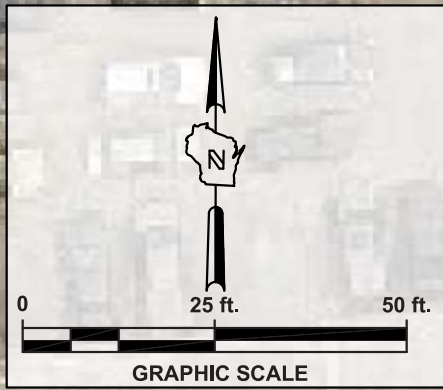
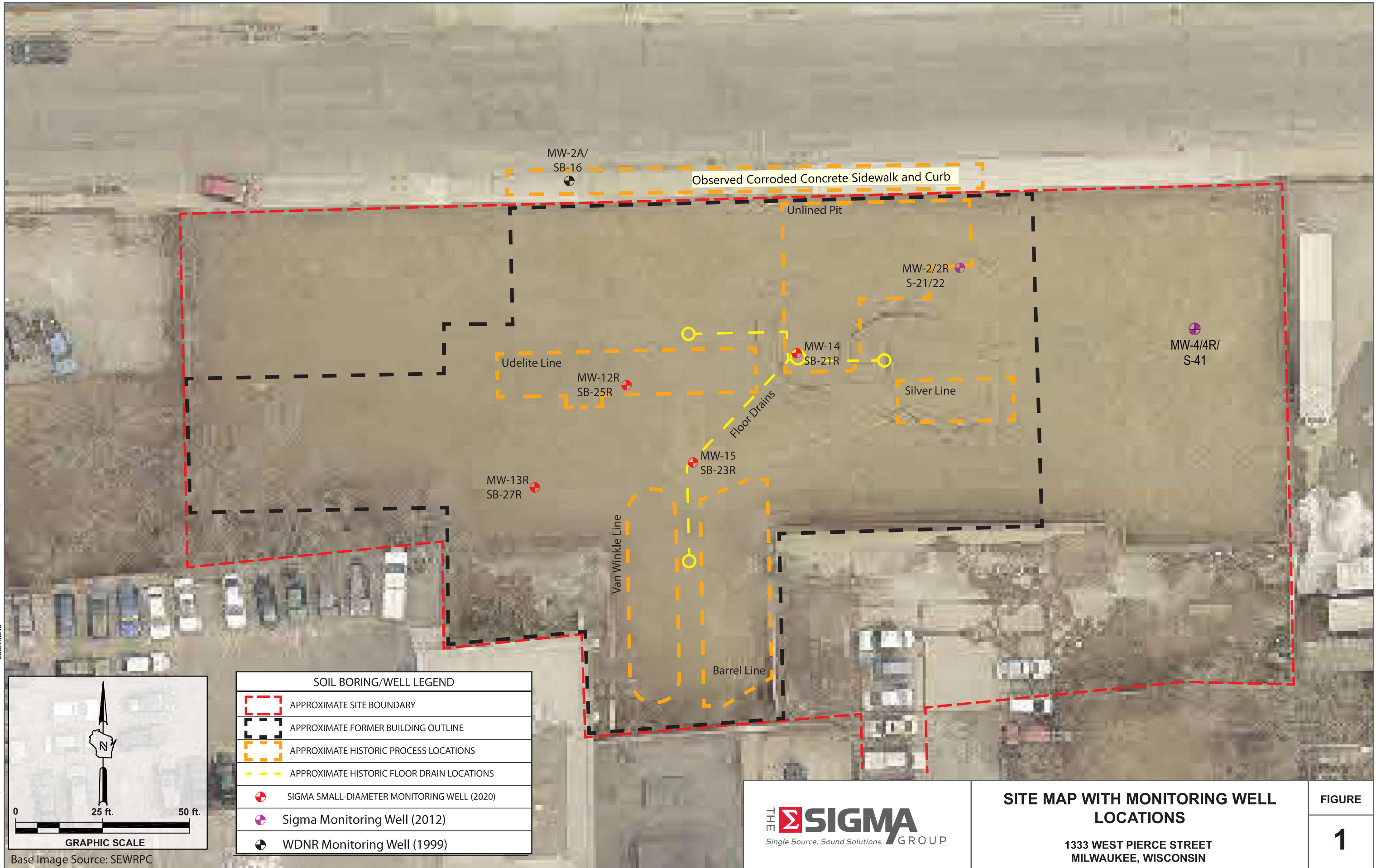
- NR 140 ES = Wisconsin Administrative Code, Chapter NR 140 Enforcement Standard
- NR 140 PAL = Wisconsin Administrative Code, Chapter NR 140 Preventive Action Limit
- NS = no standard
- µg/L = micrograms per liter (equivalent to parts per billion, ppb)
- NA = Not Analyzed
- Trip blank results: 11/08/2021: 1,4-Dioxane reported below laboratory detection limits.
- Equipment blank results: 11/08/2021: 1,4-Dioxane reported below laboratory detection limits.
- Exceedances: **BOLD** = Concentration exceeds NR 140 ES
ITALICS = Concentration exceeds NR 140 PAL
- Special notes: * = monitoring well screen submerged below water table

Data entered / updated by:
Data checked by:

JTZ
MMG

Date: 12/5/2022
Date: 12/8/2022

FIGURES



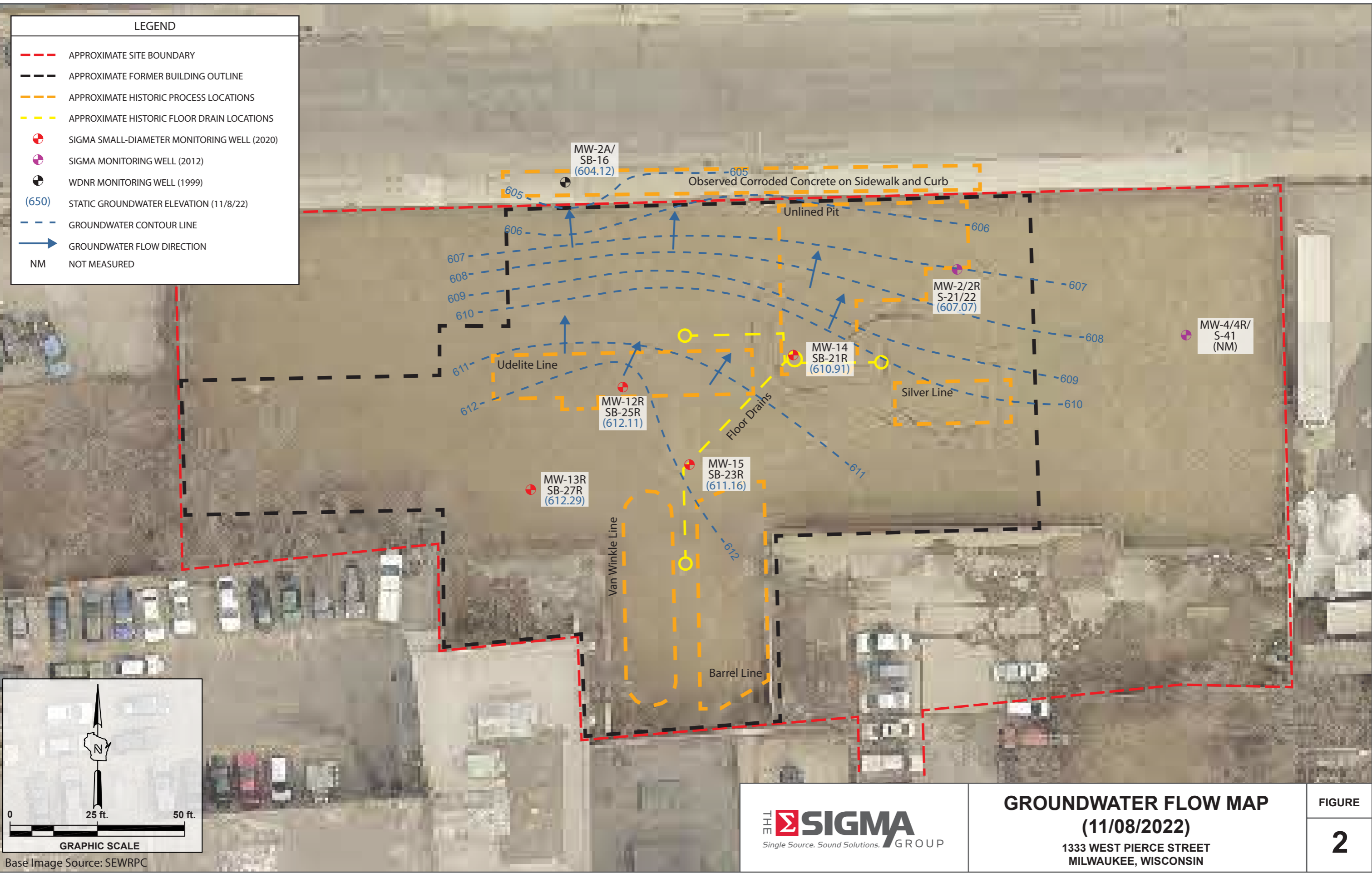
Base Image Source: SEWRPC

SOIL BORING/WELL LEGEND	
	APPROXIMATE SITE BOUNDARY
	APPROXIMATE FORMER BUILDING OUTLINE
	APPROXIMATE HISTORIC PROCESS LOCATIONS
	APPROXIMATE HISTORIC FLOOR DRAIN LOCATIONS
	SIGMA SMALL-DIAMETER MONITORING WELL (2020)
	Sigma Monitoring Well (2012)
	WDNR Monitoring Well (1999)

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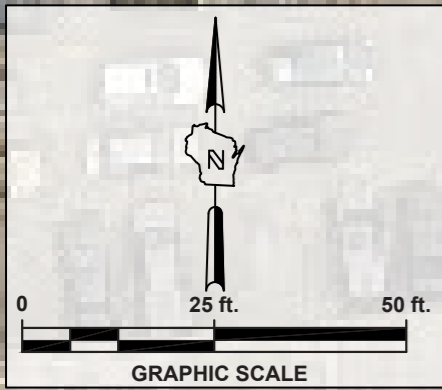
SITE MAP WITH MONITORING WELL LOCATIONS
 1333 WEST PIERCE STREET
 MILWAUKEE, WISCONSIN

FIGURE
1



LEGEND	
	APPROXIMATE SITE BOUNDARY
	APPROXIMATE FORMER BUILDING OUTLINE
	APPROXIMATE HISTORIC PROCESS LOCATIONS
	APPROXIMATE HISTORIC FLOOR DRAIN LOCATIONS
	SIGMA SMALL-DIAMETER MONITORING WELL (2020)
	SIGMA MONITORING WELL (2012)
	WDNR MONITORING WELL (1999)
(650)	STATIC GROUNDWATER ELEVATION (11/8/22)
	GROUNDWATER CONTOUR LINE
	GROUNDWATER FLOW DIRECTION
NM	NOT MEASURED

Project: 11516 | Directory: CAD | Filename: 11516_Master Map_horizontal 11x17-Copy.ai | Created By: NRW | Date: 04/06/2023



Base Image Source: SEWRPC

<p>Single Source. Sound Solutions. GROUP</p>	<p>GROUNDWATER FLOW MAP (11/08/2022)</p> <p>1333 WEST PIERCE STREET MILWAUKEE, WISCONSIN</p>	<p>FIGURE</p> <p>2</p>
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Project: 11516 | Directory: CAD | Filename: 11516_Master Map_horizontal 11x17-Copy.ai | Created By: NRW | Date: 04/06/2023

LEGEND	
	APPROXIMATE SITE BOUNDARY
	APPROXIMATE FORMER BUILDING OUTLINE
	APPROXIMATE HISTORIC PROCESS LOCATIONS
	APPROXIMATE HISTORIC FLOOR DRAIN LOCATIONS
	SIGMA SMALL-DIAMETER MONITORING WELL (2020)
	SIGMA MONITORING WELL (2012)
	WDNR MONITORING WELL (1999)
	CONCENTRATION EXCEEDS RECOMMENDED WDHS PALs FOR PFAS
	CONCENTRATION EXCEEDS RECOMMENDED WDHS ESs FOR PFAS
	CONCENTRATION EXCEEDS RECOMMENDED NR 140 ESs FOR 1,4-DIOXANE
	CONCENTRATION EXCEEDS RECOMMENDED WDHS PALs FOR 1,4-DIOXANE

ANALYTICAL KEY	
PFAS	
PFOA = Perfluorooctanoic acid	
PFOS = Perfluorooctanesulfonic acid	
FOSA = Perfluorooctane sulfonamide	
BOLD	= Concentration exceeds NR 140 and/or WDHS Preventative Action Limits (PALs)
RED	= Concentration exceeds NR 140 and/or WDHS Enforcement Standard (ESs)
NA	= Not Analyzed
All concentrations in units of µg/L (micrograms per liter)	
All groundwater elevations reported in feet above mean sea level (MSL)	

Well Location:	MW-2A
Date:	11/8/22
Water Elevation:	604.12
PFAS	
(PFOA)	29
(PFOS)	140
(FOSA)	2.0
Sum of FOSA, PFOS, and PFOA	171
VOCs	
1,4-Dioxane	2.8

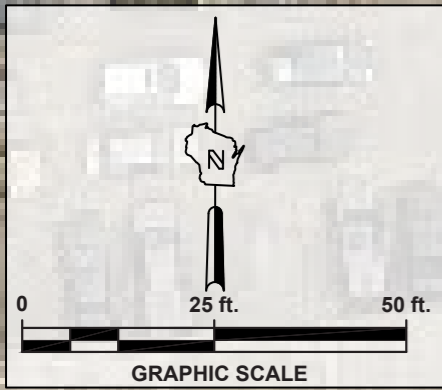
Well Location:	MW-2/2R
Date:	11/8/22
Water Elevation:	607.07
PFAS	
(PFOA)	5.5
(PFOS)	130
Sum of FOSA, PFOS, and PFOA	135.5
VOCs	
1,4-Dioxane	1.5

Well Location:	MW-12R		
Date:	11/8/21	11/8/21	11/8/22
Water Elevation:	611.69*	DUP	612.11
PFAS			
(PFOA)	15	12	7.8
(PFOS)	18	13	42
Sum of FOSA, PFOS, and PFOA	33	25	49.8
VOCs			
1,4-Dioxane	1.62	1.2	3.3

Well Location:	MW-14	
Date:	11/8/21	11/8/22
Water Elevation:	608.71	610.91
PFAS		
(PFOA)	34	18
(PFOS)	13	98
Sum of FOSA, PFOS, and PFOA	47	117.2
VOCs		
1,4-Dioxane	0.584	0.36

Well Location:	MW-13R		
Date:	11/8/21	11/8/22	11/8/22
Water Elevation:	611.79	612.29	DUP
PFAS			
(PFOA)	39	48	46
(PFOS)	8.9	4.0	4.9
Sum of FOSA, PFOS, and PFOA	47.9	52	50.9
VOCs			
1,4-Dioxane	2.14	2.3	NA

Well Location:	MW-15	
Date:	11/8/21	11/8/22
Water Elevation:	612.3	611.16
PFAS		
(PFOA)	14	18
(PFOS)	5.4	2.0
Sum of FOSA, PFOS, and PFOA	19.4	20
VOCs		
1,4-Dioxane	<0.0469	<0.10



Base Image Source: SEWRPC

Single Source. Sound Solutions. GROUP

GROUNDWATER QUALITY MAP

1333 WEST PIERCE STREET
MILWAUKEE, WISCONSIN

FIGURE

3

ATTACHMENT 1

Sigma SOP #7: Emerging Contaminant Sampling Protocol

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SOP 7: PFAS Field Sampling

Special handling and care must be taken when collecting samples for per- and polyfluoroalkyl substances (PFAS) laboratory analysis due to the potential for cross contamination caused by the presence of PFAS in common consumer products and in equipment sometimes used to collect soil, groundwater, surface water, sediment, and drinking water samples. Furthermore, the low detection limits (low part per trillion level) associated with PFAS analysis magnify potential cross contamination issues, as well as possible background PFAS levels.

The following protocols are to be applied during PFAS sampling to minimize possible cross-contamination or outside interferences. Field personnel are to act on the side of caution by strictly following the procedures for all PFAS project sites.

Field Equipment & Supplies

- Equipment (pumps, tubing, bailers, lab containers, etc.)
 - Do not use:
 - Teflon® (aka polytetrafluoroethylene, PTFE) and other fluoropolymer-containing materials (including tapes and plumbing paste)
 - Low-density polyethylene (LDPE) or glass bottles, PTFE- / Teflon-lines caps
 - Chemical (blue) ice packs
 - Aluminum foil
 - Acceptable to use:
 - High-density polyethylene (HDPE) or silicone tubing, polypropylene hose barbs, HDPE or stainless steel bailers (with nylon rope or cotton string), peristaltic pumps, stainless steel submersible pumps (check manufacturer details)
 - HDPE or polypropylene bottles (with an unlined HDPE or polypropylene screw cap) as provided by the environmental laboratory
 - Order laboratory supplies within two weeks of use in field (e.g., do not use old stock that may have been opened / exposed to unknown environmental conditions)
 - Acetate liners for soil sampling devices
 - Regular ice double-bagged in Ziplock® brand bags
 - Disposable sampling equipment is recommended to the extent possible to minimize the potential for cross-contamination. Equipment blanks are still to be collected for disposable equipment (see below).
- Sampling Strategies
 - For sites that contain multiple contaminants of concern, sample for PFAS first as other containers may contain PFAS. Do not mix PFAS sample containers and other sample containers in same cooler.
 - Follow specific sampling instructions as provided by the contract environmental laboratory regarding sample volume and bottle filling procedures.
 - Do not place sample container cap on ground or other potentially contaminated surface. Avoid contact with the inside of the sample container and its cap.
 - Place individual sealed sample container within a Ziplock® brand bag and seal.
 - Trip blank / field reagent blank, equipment blank, and duplicate samples are required for water sampling programs.

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- Trip blanks consist of laboratory-verified PFAS-free water in a laboratory-supplied container that accompanies the cooler throughout the project until it is delivered to the laboratory, and then analyzed. Field reagent blanks consist of laboratory-verified PFAS-free water that is poured in the field environment, handled in a similar manner as the regular water samples, and then delivered to the laboratory for analysis.
- Equipment blanks consist of laboratory-verified PFAS-free water poured through the sampling equipment, collected in laboratory-supplied containers, and then analyzed. If multiple pieces of sampling equipment are used (e.g., bailers and peristaltic pump / tubing), then multiple equipment blanks are to be collected.
- Duplicate samples are to be collected for every 10 (or less) water samples.
- Water samples shall not be filtered, but field efforts shall be used to collect as clear of a sample as possible.
- Disposable nitrile gloves should be donned prior to the following activities at each sampling location:
 - Decontamination of re-usable equipment
 - Prior to contact with sample bottles or water containers
 - Insertion of anything into the well
 - Insertion of silicone tubing into the peristaltic pump
 - Completion of monitoring well purging before sample collection
 - Sample collection
 - Handling of any QA/QC samples
 - After handling of any non-dedicated sampling equipment or contact with non-decontaminated surfaces
- Decontamination
 - Do not use:
 - Decon 90
 - Acceptable to use:
 - Alconox® or Liquinox® with laboratory-supplied PFAS-free water as a triple rinse
 - PVC or polyethylene brush to remove particulates
- Field Documentation
 - Do not use:
 - Waterproof / treated paper or field books, recycled paper, plastic clipboards, binders, Sharpie® and other markers, Post-It® sticky notes, and other adhesive products
 - Acceptable to use:
 - Plain / loose paper, metal or masonite clipboards, ball point pen (use for all field notes, chain of custody, sample labels)

Personal Protective Equipment & Personal Care Items

- Clothing / Personal Protective Equipment
 - Do not use:
 - Clothing or boots made of Gore-Tex™ or treated with other synthetic water resistant, stain resistant, UV protective, and/or insect-resistant chemicals
 - Coated Tyvek®
 - Fabric softener

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- Acceptable to use:
 - Synthetic or cotton material that has been previously washed at least 6 times without the use of fabric softeners (no new clothing)
 - Rain gear made from polyurethane, PVC or wax-coated materials
 - Boots made with polyurethane, PVC, or untreated leather
 - Well-worn leather boots may be worn in the field provided staff wash their hands after touching the boots or laces
 - Uncoated Tyvek®
 - Disposable nitrile gloves
- Personal Care Products (day of sample collection)
 - Do not use:
 - Cosmetics, moisturizers, hand cream, antiperspirant / deodorant, scented body wash / shampoo / conditioner, dental floss
 - Acceptable to use:
 - Sunblock and insect repellants that consist of 100% natural ingredients, which are applied prior to arrival at the project site or in the staging area
 - Sunscreens: Discuss specific item with Sigma Geoscience QA/QC Manager
 - Insect repellants: Deep Woods OFF, Sawyer Permethrin
- Food & Beverage
 - Do not use:
 - Pre-packaged food, fast food wrappers or containers, aluminum foil - no food is allowed on-site for duration of sampling work
 - Non-stick cookware and containers
 - Chemical (blue) ice packs
 - Acceptable to use:
 - Bottled water and sports drinks outside the exclusion zone
 - Fast food shall not be consumed within 48 hours of sampling.
 - Hands and face must be thoroughly washed with soap and water after consuming food and before entering the site and the exclusion zone.

ATTACHMENT 2

Bill of Lading – Clean Harbors

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number <i>LES09</i>		2. Page 1 of <i>1</i>		3. Emergency Response Phone <i>(800) 483-3710</i>		4. Manifest Tracking Number <i>017771572 FLE</i>				
		5. Generator's Name and Mailing Address <i>City of Milwaukee 809 N Broadway Street Milwaukee, WI 53202</i>						Generator's Site Address (if different than mailing address) <i>1333 West Pierce Street Milwaukee, WI 53204</i>				
Generator's Phone: <i>414 226-5693</i> <i>ATTN: Mathew Reimer</i>												
6. Transporter 1 Company Name <i>Clean Harbors Environmental Services, Inc.</i>						U.S. EPA ID Number <i>MAD039322250</i>						
7. Transporter 2 Company Name						U.S. EPA ID Number						
8. Designated Facility Name and Site Address <i>Clean Harbors Environmental Services, Inc. 2247 South Highway 71 Kimball, NE 68145</i>						U.S. EPA ID Number <i>NED981723513</i>						
Facility's Phone: <i>308 235-4012</i>												
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))				10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
						No.	Type					
	<i>x</i>	<i>1. UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQ LIQ, N.O.S., (PFAS, 1,4-DIOXANE) 9, PG III</i>				<i>1</i>	<i>Drum</i>	<i>1</i>		<i>Narr</i>		
		2.										
		3.										
	4.											
14. Special Handling Instructions and Additional Information												
<small>Authority on initial transporter to add or substitute additional transporters on generator's behalf for purposes of transportation efficiency, convenience, or safety.</small> Contract retained by generator confers agency												
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.												
Generator's/Offeror's Printed/Typed Name <i>Mathew Reimer</i>						Signature <i>Mathew Reimer</i>			Month Day Year <i>11 14 22</i>			
INT'L	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Transporter signature (for exports only): _____ Date leaving U.S.: _____											
	TRANSPORTER	17. Transporter Acknowledgment of Receipt of Materials										
Transporter 1 Printed/Typed Name						Signature <i>[Signature]</i>			Month Day Year <i>11 14 22</i>			
Transporter 2 Printed/Typed Name						Signature			Month Day Year			
DESIGNATED FACILITY	18. Discrepancy											
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection											
	18b. Alternate Facility (or Generator)						Manifest Reference Number:					
	Facility's Phone:						U.S. EPA ID Number					
18c. Signature of Alternate Facility (or Generator)									Month Day Year			
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)												
1. <i>H040</i>			2.			3.			4.			
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a												
Printed/Typed Name						Signature			Month Day Year			

Read all instructions before completing this form.

1. Federal regulations require generators and transporters of hazardous waste and owners or operators of receiving facilities designated on the manifest to complete this form (EPA Form 8700-22) and, if necessary, the continuation sheet (EPA Form 8700-22A) for both inter- and intrastate transportation of hazardous waste.
2. This manifest reflects formatting changes made by U.S. EPA in December 2017. Beginning on June 30, 2018, this manifest (Revision 12-17) must be used and all previous editions are prohibited. Go to www.epa.gov/e-manifest for additional information.
3. This form must be purchased from a registered printer (<https://www.epa.gov/hwgenerators/approved-registered-printers-epas-manifest-registry#how>) and has been designed to be filled out using standard computer printers; a firm point pen may also be used—press down hard. After June 30, 2018, this form can also be completed electronically in EPA's e-Manifest system.

The public burden related to the Uniform Hazardous Waste Manifest, which is approved under OMB 2050-0070, is estimated to average (per manifest) 20 minutes for generators, 20 minutes for transporters, and 20 minutes for owners and operators of receiving facilities designated on the manifest. This is a mandatory collection under 40 CFR Part 262, Subpart B, 40 CFR Part 265, Subpart B, and 40 CFR Parts 264 and 266, Subpart E. An agency may not conduct or sponsor, and persons are not subject to respond to, a collection of information unless it displays a currently valid OMB control number. This collection of information is not intended to impose a burden on individuals, businesses, or organizations, or as specified in the corresponding regulation. Send comments on this Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of e-Manifest, to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2207T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Please include the OMB control number in any correspondence. Do NOT send the completed manifest forms to this address. Privacy Act Statement - None of the information collected under the Manifest Program is considered Personally Identifiable Information (PI) or Confidential Business Information (CBI).

I. Instructions for Generators

Item 1. Generator's U.S. EPA Identification Number

Enter the generator's U.S. EPA twelve-digit identification number, or the state generator identification number if the generator site does not have an EPA identification number.

Item 2. Page 1 of ____

Enter the total number of pages used to complete this manifest (i.e., the first page (EPA Form 8700-22) plus the number of continuation sheets (EPA Form 8700-22A), if any).

Item 3. Emergency Response Phone Number

Enter a phone number for which emergency response information can be obtained in the event of an incident during transportation. The emergency response phone number must:

1. Be the number of the generator or the number of an agency or organization who is capable of and accepts responsibility for providing detailed information about the shipment;
2. Reach a phone that is monitored 24 hours a day at all times the waste is in transportation (including transportation related storage); and
3. Reach someone who is either knowledgeable of the hazardous waste being shipped and has comprehensive emergency response and spill cleanup/incident mitigation information for the material being shipped or has immediate access to a person who has that knowledge and information about the shipment.

Note: Emergency Response phone number information should only be entered in Item 3 when there is one phone number that applies to all the waste materials described in Item 9b. If a situation (e.g., consolidated shipments) arises where more than one Emergency Response phone number applies to the various wastes listed on the manifest, the phone numbers associated with each specific material should be entered after its description in Item 9b.

Item 4. Manifest Tracking Number

This unique tracking number must be pre-printed on the manifest by the forms printer.

Item 5. Generator's Mailing Address, Phone Number and Site Address

Enter the name of the generator, the mailing address to which the completed manifest signed by the designated facility should be mailed, and the generator's telephone number. Note, the telephone number (including area code) should be the normal business number for the generator, or the number where the generator or his authorized agent may be reached to provide instructions in the event the designated and/or alternate (if any) facility rejects some or all of the shipment. Also enter the physical site address from which the shipment originates only if this address is different than the mailing address.

Item 6. Transporter 1 Company Name, and U.S. EPA ID Number

Enter the company name and U.S. EPA ID number of the first transporter who will transport the waste. Vehicle or driver information may not be entered here.

Item 7. Transporter 2 Company Name and U.S. EPA ID Number

If applicable, enter the company name and U.S. EPA ID number of the second transporter who will transport the waste. Vehicle or driver information may not be entered here. If more than two transporters are needed, use a continuation sheet(s) (EPA Form 8700-22A).

Item 8. Designated Facility Name, Site Address, and U.S. EPA ID Number

Enter the company name and site address of the facility designated to receive the waste listed on this manifest. Also enter the facility's phone number and the U.S. EPA twelve-digit identification number of the facility.

Item 9. U.S. DOT Description (Including Proper Shipping Name, Hazard Class or Division, Identification Number, and Packing Group)

Item 9a. If the wastes identified in Item 9b consist of both hazardous and nonhazardous materials, then identify the hazardous materials by entering an "X" in this Item next to the corresponding hazardous material identified in Item 9b.

Item 9b. Enter the U.S. DOT Proper Shipping Name, Hazard Class or Division, Identification Number (UN/NA) and Packing Group for each waste as identified in 49 CFR part 172. Include technical name(s) and reportable quantity references, if applicable.

Note: If additional space is needed for waste descriptions, enter these additional descriptions in Item 27 on the continuation sheet (EPA Form 8700-22A). Also, if more than one Emergency Response phone number applies to the various wastes described in either Item 9b or Item 27, enter applicable Emergency Response phone numbers immediately following the shipping descriptions for those items.

Item 10. Containers (Number and Type)

Enter the number of containers for each waste and the appropriate abbreviation from Table I (below) for the type of container.

TABLE I.--TYPES OF CONTAINERS

BA = Burlap, cloth, paper, or plastic bags.	DT = Dump truck.
CF = Fiber or plastic boxes, cartons, cases.	DW = Wooden drums, barrels, kegs.
CM = Metal boxes, cartons, cases (including roll-offs).	HG = Hopper or gondola cars.
CW = Wooden boxes, cartons, cases.	TC = Tank cars.
CY = Cylinders.	TP = Portable tanks.
DF = Fiberboard or plastic drums, barrels, kegs.	TT = Cargo tanks (tank trucks).
DM = Metal drums, barrels, kegs.	

Item 11. Total Quantity

Enter, in designated boxes, the total quantity of waste. Round partial units to the nearest whole unit, and do not enter decimals or fractions. To the extent practical, report quantities using appropriate units of measure that will allow you to report quantities with precision.

Waste quantities entered should be based on actual measurements or reasonably accurate estimates of actual quantities shipped. Container capacities are not acceptable as estimates.

Item 12. Units of Measure (Weight/Volume)

Enter, in designated boxes, the appropriate abbreviation from Table II (below) for the unit of measure.

TABLE II.--UNITS OF MEASURE

G = Gallons (liquids only).	N = Cubic Meters.
K = Kilograms.	P = Pounds.
L = Liters (liquids only).	T = Tons (2000 Pounds).
M = Metric Tons (1000 kilograms).	Y = Cubic Yards.

Note: Tons, Metric Tons, Cubic Meters, and Cubic Yards should only be reported for very large bulk shipments, such as rail cars, tank trucks, or barges.

Item 13. Waste Codes

Enter up to six federal and state waste codes to describe each waste stream identified in Item 9b. State waste codes that are not redundant with federal codes must be entered here, in addition to the federal waste codes which are most representative of the properties of the waste.

Item 14. Special Handling Instructions and Additional Information

1. Generators may enter any special handling or shipment-specific information necessary for the proper management or tracking of the materials under the generator's or other handler's business processes, such as waste profile numbers, container codes, bar codes, or response guide numbers. Generators also may use this space to enter additional descriptive information about their shipped materials, such as chemical names, constituent percentages, physical state, or specific gravity of wastes identified with volume units in Item 12.
2. This space may be used to record limited types of federally required information for which there is no specific space provided on the manifest, including any alternate facility designations; the manifest tracking number of the original manifest for rejected wastes and residues that are re-shipped under a second manifest; and the specification of polychlorinated biphenyl (PCB) waste descriptions and PCB out-of-service dates required under 40 CFR 761.207. Generators, however, cannot be required to enter information in this space to meet state regulatory requirements.

Item 15. Generator's/Officer's Certifications

1. The generator must read, sign, and date the waste minimization certification statement. In signing the waste minimization certification statement, those generators who have not been exempted by statute or regulation from the duty to make a waste minimization certification under section 3002(b) of RCRA are also certifying that they have complied with the waste minimization requirements. The Generator's Certification also contains the required attestation that the shipment has been properly prepared and is in proper condition for transportation (the shipper's certification). The content of the shipper's certification statement is as follows: "I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent." When a party other than the generator prepares the shipment for transportation, this party may also sign the shipper's certification statement as the offeror of the shipment.
2. Generator or Offeror personnel may preprint the words, "On behalf of" in the signature block or may hand write this statement in the signature block prior to signing the generator/offeror certification, to indicate that the individual signs as the employee or agent of the named principal.

Note: All of the above information except the handwritten signature required in Item 15 may be pre-printed. (Handwritten signatures are not applicable if the generator is preparing and signing an electronic manifest using EPA's e-Manifest system.)

ATTACHMENT 3

Groundwater Laboratory Analytical Reports

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ANALYTICAL REPORT

PREPARED FOR

Attn: Me'le'sa Greene
Sigma Group Inc., The
1300 West Canal Street
Milwaukee, Wisconsin 53233

Generated 11/30/2022 5:20:11 PM

JOB DESCRIPTION

Project 11516 Wisconsin Groundwater

JOB NUMBER

500-225090-1

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization



Generated
11/30/2022 5:20:11 PM

Authorized for release by
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Case Narrative

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Job ID: 500-225090-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-225090-1

Comments

No additional comments.

Receipt

The samples were received on 11/9/2022 10:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8° C and 1.8° C.

Receipt Exceptions

The following sample(s): #1 through #8 are missing the collection times. Collection times were verified by the COC. MW-2A (500-225090-1), MW-2/2R (500-225090-2), MW-12R (500-225090-3), MW-13R (500-225090-4), MW-14 (500-225090-5), MW-15 (500-225090-6), Duplicate (500-225090-7) and Equipment Blank (500-225090-8).

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

LCMS

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was below the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte.

MW-12R (500-225090-3)

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was above the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte. MW-13R (500-225090-4)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples: MW-2/2R (500-225090-2), MW-12R (500-225090-3), MW-14 (500-225090-5), Duplicate (500-225090-7) and (500-225204-A-1-A). These samples were reanalyzed with concurring IDA results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Methods 7196A, SM 3500 CR B: Reanalysis of the following samples were performed outside of the analytical holding time. This was due to the initial calibration being outside of parameters. MW-2A (500-225090-1) and MW-12R (500-225090-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3535: The following samples in preparation batch 320-634650 were light brown in color prior to extraction. MW-12R (500-225090-3), MW-13R (500-225090-4), MW-15 (500-225090-6) and Duplicate (500-225090-7)

Method: 3535_PFC_28D

Matrix: Aqueous

Method 3535: The following samples in preparation batch 320-634650 were observed to have floating particulates present in the sample bottle. MW-2/2R (500-225090-2), MW-13R (500-225090-4), MW-15 (500-225090-6) and Duplicate (500-225090-7)

Method: 3535_PFC_28D

Matrix: Aqueous

Method 3535: Due to the excess amount of floating particulates, the following samples were centrifuged and decanted into new 250 mL container: MW-13R (500-225090-4) and Duplicate (500-225090-7). After centrifuging and decanting, the samples were fortified with IDA and then extracted. 320-634650

Case Narrative

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Job ID: 500-225090-1 (Continued)

Laboratory: Eurofins Chicago (Continued)

Method: 3535_PFC_28D
Matrix: Aqueous

Method 3535: Due to a thin layer of sediment present in the bottom of the bottle, the following sample was centrifuged and decanted into new 250 mL container: MW-12R (500-225090-3). After centrifuging and decanting, the sample was fortified with IDA and then extracted. 320-634650

Method: 3535_PFC_28D
Matrix: Aqueous

Method 3535: The following samples in preparation batch 320-634650 were observed to have a thin layer of sediment present in the bottom of the bottle prior to extraction. MW-12R (500-225090-3)

Method: 3535_PFC_28D
Matrix: Aqueous

Method 3535: During the solid phase extraction process, the following samples contained non-settable particulates which clogged the solid phase extraction column: MW-2/2R (500-225090-2)320-634650 .

Method: 3535_PFC_28D
Matrix: Aqueous

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-2A

Lab Sample ID: 500-225090-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.8		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanoic acid (PFBA)	11		4.5	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	17		1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	14		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.0		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	29		1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.82	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.7		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	4.1		1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	57		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic acid (PFHpS)	1.8		1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	140		1.8	0.49	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	2.0		1.8	0.88	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2/2R

Lab Sample ID: 500-225090-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.5		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanoic acid (PFBA)	24		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	11		1.9	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.4		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.5		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.92	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.82	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	4.1		1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	42		1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic acid (PFHpS)	0.82	J	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	130		1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-12R

Lab Sample ID: 500-225090-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.3		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Perfluoropentanoic acid (PFPeA)	10		2.0	0.48	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	4.6		2.0	0.57	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7		2.0	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.8		2.0	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.66	J	2.0	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	7.2		2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.9		2.0	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic acid (PFHpS)	0.58	J I	2.0	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	42		2.0	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-13R

Lab Sample ID: 500-225090-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.3		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanoic acid (PFBA)	11		4.7	2.3	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Chicago

Detection Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-13R (Continued)

Lab Sample ID: 500-225090-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	26		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	19		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	9.4		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	48		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.94	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.60	J I	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.0		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-14

Lab Sample ID: 500-225090-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.36		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanoic acid (PFBA)	9.6		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	15		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	9.2		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.6		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	18		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.38	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.7		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	3.6		1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	44		1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	98		1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	1.2	J	1.9	0.92	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-15

Lab Sample ID: 500-225090-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.9		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	8.6		1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	7.5		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.3		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	18		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.2	J	1.9	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.84	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.40	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: Duplicate

Lab Sample ID: 500-225090-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	11		4.8	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	25		1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	20		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	9.7		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	46		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.29	J	1.9	0.26	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Chicago

Detection Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: Duplicate (Continued)

Lab Sample ID: 500-225090-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.81	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.63	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.9		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: Equipment Blank

Lab Sample ID: 500-225090-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Chicago



Method Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Method	Method Description	Protocol	Laboratory
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	EET BUF
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
7196A	Chromium, Hexavalent	SW846	EET CHI
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET BUF
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-225090-1	MW-2A	Water	11/08/22 11:58	11/09/22 10:30
500-225090-2	MW-2/2R	Water	11/08/22 12:15	11/09/22 10:30
500-225090-3	MW-12R	Water	11/08/22 11:45	11/09/22 10:30
500-225090-4	MW-13R	Water	11/08/22 12:20	11/09/22 10:30
500-225090-5	MW-14	Water	11/08/22 12:35	11/09/22 10:30
500-225090-6	MW-15	Water	11/08/22 12:05	11/09/22 10:30
500-225090-7	Duplicate	Water	11/08/22 00:00	11/09/22 10:30
500-225090-8	Equipment Blank	Water	11/08/22 00:00	11/09/22 10:30

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Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-2A

Lab Sample ID: 500-225090-1

Date Collected: 11/08/22 11:58

Matrix: Water

Date Received: 11/09/22 10:30

Method: SW846 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.8		0.20	0.10	ug/L		11/14/22 15:43	11/16/22 19:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	27		15 - 110				11/14/22 15:43	11/16/22 19:57	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	11		4.5	2.2	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluoropentanoic acid (PFPeA)	17		1.8	0.44	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorohexanoic acid (PFHxA)	14		1.8	0.52	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluoroheptanoic acid (PFHpA)	5.0		1.8	0.23	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorooctanoic acid (PFOA)	29		1.8	0.77	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorononanoic acid (PFNA)	0.82	J	1.8	0.24	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluoroundecanoic acid (PFUnA)	<0.99		1.8	0.99	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorotridecanoic acid (PFTTrDA)	<1.2		1.8	1.2	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorotetradecanoic acid (PFTeA)	<0.66		1.8	0.66	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorobutanesulfonic acid (PFBS)	4.7		1.8	0.18	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluoropentanesulfonic acid (PFPeS)	4.1		1.8	0.27	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorohexanesulfonic acid (PFHxS)	57		1.8	0.51	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluoroheptanesulfonic acid (PFHpS)	1.8		1.8	0.17	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorooctanesulfonic acid (PFOS)	140		1.8	0.49	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorododecanesulfonic acid (PFDoS)	<0.87		1.8	0.87	ng/L		11/22/22 06:53	11/24/22 21:39	1
Perfluorooctanesulfonamide (FOSA)	2.0		1.8	0.88	ng/L		11/22/22 06:53	11/24/22 21:39	1
NEtFOSA	<0.78		1.8	0.78	ng/L		11/22/22 06:53	11/24/22 21:39	1
NMeFOSA	<0.39		1.8	0.39	ng/L		11/22/22 06:53	11/24/22 21:39	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		11/22/22 06:53	11/24/22 21:39	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		11/22/22 06:53	11/24/22 21:39	1
NMeFOSE	<1.3		3.6	1.3	ng/L		11/22/22 06:53	11/24/22 21:39	1
NEtFOSE	<0.77		1.8	0.77	ng/L		11/22/22 06:53	11/24/22 21:39	1
4:2 FTS	<0.22		1.8	0.22	ng/L		11/22/22 06:53	11/24/22 21:39	1
6:2 FTS	<2.3		4.5	2.3	ng/L		11/22/22 06:53	11/24/22 21:39	1
8:2 FTS	<0.41		1.8	0.41	ng/L		11/22/22 06:53	11/24/22 21:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		11/22/22 06:53	11/24/22 21:39	1
HFPO-DA (GenX)	<1.4		3.6	1.4	ng/L		11/22/22 06:53	11/24/22 21:39	1
9CI-PF3ONS	<0.22		1.8	0.22	ng/L		11/22/22 06:53	11/24/22 21:39	1
11CI-PF3OUdS	<0.29		1.8	0.29	ng/L		11/22/22 06:53	11/24/22 21:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	52		25 - 150				11/22/22 06:53	11/24/22 21:39	1
13C5 PFPeA	70		25 - 150				11/22/22 06:53	11/24/22 21:39	1
13C2 PFHxA	83		25 - 150				11/22/22 06:53	11/24/22 21:39	1

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Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-2A

Lab Sample ID: 500-225090-1

Date Collected: 11/08/22 11:58

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFHpA	89		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C4 PFOA	94		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C5 PFNA	91		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C2 PFDA	93		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C2 PFUnA	90		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C2 PFDoA	79		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C2 PFTeDA	74		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C3 PFBS	84		25 - 150	11/22/22 06:53	11/24/22 21:39	1
18O2 PFHxS	87		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C4 PFOS	86		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C8 FOSA	97		10 - 150	11/22/22 06:53	11/24/22 21:39	1
d3-NMeFOSAA	76		25 - 150	11/22/22 06:53	11/24/22 21:39	1
d5-NEtFOSAA	83		25 - 150	11/22/22 06:53	11/24/22 21:39	1
d-N-MeFOSA-M	71		10 - 150	11/22/22 06:53	11/24/22 21:39	1
d-N-EtFOSA-M	69		10 - 150	11/22/22 06:53	11/24/22 21:39	1
d7-N-MeFOSE-M	68		10 - 150	11/22/22 06:53	11/24/22 21:39	1
d9-N-EtFOSE-M	70		10 - 150	11/22/22 06:53	11/24/22 21:39	1
M2-4:2 FTS	145		25 - 150	11/22/22 06:53	11/24/22 21:39	1
M2-6:2 FTS	150		25 - 150	11/22/22 06:53	11/24/22 21:39	1
M2-8:2 FTS	137		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C3 HFPO-DA	80		25 - 150	11/22/22 06:53	11/24/22 21:39	1
13C2 10:2 FTS	104		25 - 150	11/22/22 06:53	11/24/22 21:39	1

General Chemistry

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Chromium, hexavalent (SW846 7196A)	<3.2	H	10	3.2	ug/L			11/09/22 11:59	1

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-2/2R

Lab Sample ID: 500-225090-2

Date Collected: 11/08/22 12:15

Matrix: Water

Date Received: 11/09/22 10:30

Method: SW846 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.5		0.20	0.10	ug/L		11/14/22 15:43	11/16/22 20:19	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,4-Dioxane-d8	18		15 - 110				11/14/22 15:43	11/16/22 20:19	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	24		4.6	2.2	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluoropentanoic acid (PFPeA)	11		1.9	0.45	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorohexanoic acid (PFHxA)	3.4		1.9	0.54	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluoroheptanoic acid (PFHpA)	1.8	J	1.9	0.23	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorooctanoic acid (PFOA)	5.5		1.9	0.79	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorononanoic acid (PFNA)	0.92	J	1.9	0.25	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorodecanoic acid (PFDA)	0.82	J	1.9	0.29	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.9	0.51	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorotridecanoic acid (PFTTrDA)	<1.2		1.9	1.2	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.9	0.68	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluoropentanesulfonic acid (PFPeS)	4.1		1.9	0.28	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorohexanesulfonic acid (PFHxS)	42		1.9	0.53	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluoroheptanesulfonic acid (PFHpS)	0.82	J	1.9	0.18	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorooctanesulfonic acid (PFOS)	130		1.9	0.50	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.9	0.34	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorododecanesulfonic acid (PFDoS)	<0.90		1.9	0.90	ng/L		11/22/22 06:53	11/24/22 21:49	1
Perfluorooctanesulfonamide (FOSA)	<0.91		1.9	0.91	ng/L		11/22/22 06:53	11/24/22 21:49	1
NEtFOSA	<0.81		1.9	0.81	ng/L		11/22/22 06:53	11/24/22 21:49	1
NMeFOSA	<0.40		1.9	0.40	ng/L		11/22/22 06:53	11/24/22 21:49	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		11/22/22 06:53	11/24/22 21:49	1
NEtFOSAA	<1.2		4.6	1.2	ng/L		11/22/22 06:53	11/24/22 21:49	1
NMeFOSE	<1.3		3.7	1.3	ng/L		11/22/22 06:53	11/24/22 21:49	1
NEtFOSE	<0.79		1.9	0.79	ng/L		11/22/22 06:53	11/24/22 21:49	1
4:2 FTS	<0.22		1.9	0.22	ng/L		11/22/22 06:53	11/24/22 21:49	1
6:2 FTS	<2.3		4.6	2.3	ng/L		11/22/22 06:53	11/24/22 21:49	1
8:2 FTS	<0.43		1.9	0.43	ng/L		11/22/22 06:53	11/24/22 21:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.37		1.9	0.37	ng/L		11/22/22 06:53	11/24/22 21:49	1
HFPO-DA (GenX)	<1.4		3.7	1.4	ng/L		11/22/22 06:53	11/24/22 21:49	1
9CI-PF3ONS	<0.22		1.9	0.22	ng/L		11/22/22 06:53	11/24/22 21:49	1
11CI-PF3OUdS	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 21:49	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	28		25 - 150				11/22/22 06:53	11/24/22 21:49	1
13C5 PFPeA	46		25 - 150				11/22/22 06:53	11/24/22 21:49	1
13C2 PFHxA	59		25 - 150				11/22/22 06:53	11/24/22 21:49	1
13C4 PFHpA	61		25 - 150				11/22/22 06:53	11/24/22 21:49	1
13C4 PFOA	71		25 - 150				11/22/22 06:53	11/24/22 21:49	1

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Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-2/2R

Lab Sample ID: 500-225090-2

Date Collected: 11/08/22 12:15

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C5 PFNA	70		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C2 PFDA	74		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C2 PFUnA	74		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C2 PFDoA	61		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C2 PFTeDA	48		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C3 PFBS	59		25 - 150	11/22/22 06:53	11/24/22 21:49	1
18O2 PFHxS	69		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C4 PFOS	72		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C8 FOSA	73		10 - 150	11/22/22 06:53	11/24/22 21:49	1
d3-NMeFOSAA	62		25 - 150	11/22/22 06:53	11/24/22 21:49	1
d5-NEtFOSAA	71		25 - 150	11/22/22 06:53	11/24/22 21:49	1
d-N-MeFOSA-M	47		10 - 150	11/22/22 06:53	11/24/22 21:49	1
d-N-EtFOSA-M	45		10 - 150	11/22/22 06:53	11/24/22 21:49	1
d7-N-MeFOSE-M	43		10 - 150	11/22/22 06:53	11/24/22 21:49	1
d9-N-EtFOSE-M	45		10 - 150	11/22/22 06:53	11/24/22 21:49	1
M2-4:2 FTS	113		25 - 150	11/22/22 06:53	11/24/22 21:49	1
M2-6:2 FTS	148		25 - 150	11/22/22 06:53	11/24/22 21:49	1
M2-8:2 FTS	151	*5+	25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C3 HFPO-DA	60		25 - 150	11/22/22 06:53	11/24/22 21:49	1
13C2 10:2 FTS	88		25 - 150	11/22/22 06:53	11/24/22 21:49	1

General Chemistry

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Chromium, hexavalent (SW846 7196A)	<3.2		10	3.2	ug/L			11/09/22 12:00	1

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-12R

Lab Sample ID: 500-225090-3

Date Collected: 11/08/22 11:45

Matrix: Water

Date Received: 11/09/22 10:30

Method: SW846 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	3.3		0.20	0.10	ug/L		11/14/22 15:43	11/16/22 20:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	22		15 - 110				11/14/22 15:43	11/16/22 20:42	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		4.9	2.4	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluoropentanoic acid (PFPeA)	10		2.0	0.48	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorohexanoic acid (PFHxA)	4.6		2.0	0.57	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluoroheptanoic acid (PFHpA)	2.7		2.0	0.24	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorooctanoic acid (PFOA)	7.8		2.0	0.83	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorononanoic acid (PFNA)	0.66	J	2.0	0.26	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorodecanoic acid (PFDA)	<0.30		2.0	0.30	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	0.54	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorotridecanoic acid (PFTTrDA)	<1.3		2.0	1.3	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorotetradecanoic acid (PFTeA)	<0.72		2.0	0.72	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorobutanesulfonic acid (PFBS)	7.2		2.0	0.20	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluoropentanesulfonic acid (PFPeS)	<0.29		2.0	0.29	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorohexanesulfonic acid (PFHxS)	2.9		2.0	0.56	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluoroheptanesulfonic acid (PFHpS)	0.58	J I	2.0	0.19	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorooctanesulfonic acid (PFOS)	42		2.0	0.53	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorononanesulfonic acid (PFNS)	<0.36		2.0	0.36	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		2.0	0.31	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorododecanesulfonic acid (PFDoS)	<0.95		2.0	0.95	ng/L		11/22/22 06:53	11/24/22 21:59	1
Perfluorooctanesulfonamide (FOSA)	<0.96		2.0	0.96	ng/L		11/22/22 06:53	11/24/22 21:59	1
NEtFOSA	<0.85		2.0	0.85	ng/L		11/22/22 06:53	11/24/22 21:59	1
NMeFOSA	<0.42		2.0	0.42	ng/L		11/22/22 06:53	11/24/22 21:59	1
NMeFOSAA	<1.2		4.9	1.2	ng/L		11/22/22 06:53	11/24/22 21:59	1
NEtFOSAA	<1.3		4.9	1.3	ng/L		11/22/22 06:53	11/24/22 21:59	1
NMeFOSE	<1.4		3.9	1.4	ng/L		11/22/22 06:53	11/24/22 21:59	1
NEtFOSE	<0.83		2.0	0.83	ng/L		11/22/22 06:53	11/24/22 21:59	1
4:2 FTS	<0.24		2.0	0.24	ng/L		11/22/22 06:53	11/24/22 21:59	1
6:2 FTS	<2.4		4.9	2.4	ng/L		11/22/22 06:53	11/24/22 21:59	1
8:2 FTS	<0.45		2.0	0.45	ng/L		11/22/22 06:53	11/24/22 21:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.39		2.0	0.39	ng/L		11/22/22 06:53	11/24/22 21:59	1
HFPO-DA (GenX)	<1.5		3.9	1.5	ng/L		11/22/22 06:53	11/24/22 21:59	1
9Cl-PF3ONS	<0.24		2.0	0.24	ng/L		11/22/22 06:53	11/24/22 21:59	1
11Cl-PF3OUdS	<0.31		2.0	0.31	ng/L		11/22/22 06:53	11/24/22 21:59	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	42		25 - 150				11/22/22 06:53	11/24/22 21:59	1
13C5 PFPeA	66		25 - 150				11/22/22 06:53	11/24/22 21:59	1
13C2 PFHxA	85		25 - 150				11/22/22 06:53	11/24/22 21:59	1
13C4 PFHpA	88		25 - 150				11/22/22 06:53	11/24/22 21:59	1

Eurofins Chicago

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-12R

Lab Sample ID: 500-225090-3

Date Collected: 11/08/22 11:45

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOA	99		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C5 PFNA	105		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C2 PFDA	108		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C2 PFUnA	115		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C2 PFDoA	102		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C2 PFTeDA	94		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C3 PFBS	89		25 - 150	11/22/22 06:53	11/24/22 21:59	1
18O2 PFHxS	97		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C4 PFOS	98		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C8 FOSA	100		10 - 150	11/22/22 06:53	11/24/22 21:59	1
d3-NMeFOSAA	110		25 - 150	11/22/22 06:53	11/24/22 21:59	1
d5-NEtFOSAA	125		25 - 150	11/22/22 06:53	11/24/22 21:59	1
d-N-MeFOSA-M	77		10 - 150	11/22/22 06:53	11/24/22 21:59	1
d-N-EtFOSA-M	80		10 - 150	11/22/22 06:53	11/24/22 21:59	1
d7-N-MeFOSE-M	71		10 - 150	11/22/22 06:53	11/24/22 21:59	1
d9-N-EtFOSE-M	81		10 - 150	11/22/22 06:53	11/24/22 21:59	1
M2-4:2 FTS	193	*5+	25 - 150	11/22/22 06:53	11/24/22 21:59	1
M2-6:2 FTS	235	*5+	25 - 150	11/22/22 06:53	11/24/22 21:59	1
M2-8:2 FTS	260	*5+	25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C3 HFPO-DA	88		25 - 150	11/22/22 06:53	11/24/22 21:59	1
13C2 10:2 FTS	218	*5+	25 - 150	11/22/22 06:53	11/24/22 21:59	1

General Chemistry

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Chromium, hexavalent (SW846 7196A)	<3.2	H	10	3.2	ug/L			11/09/22 12:01	1

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-13R

Lab Sample ID: 500-225090-4

Date Collected: 11/08/22 12:20

Matrix: Water

Date Received: 11/09/22 10:30

Method: SW846 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.3		0.20	0.10	ug/L		11/14/22 15:43	11/16/22 21:04	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,4-Dioxane-d8	25		15 - 110				11/14/22 15:43	11/16/22 21:04	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	11		4.7	2.3	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluoropentanoic acid (PFPeA)	26		1.9	0.46	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorohexanoic acid (PFHxA)	19		1.9	0.55	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluoroheptanoic acid (PFHpA)	9.4		1.9	0.24	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorooctanoic acid (PFOA)	48		1.9	0.81	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorotridecanoic acid (PFTTrDA)	<1.2		1.9	1.2	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorotetradecanoic acid (PFTeA)	<0.69		1.9	0.69	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorobutanesulfonic acid (PFBS)	0.94	J	1.9	0.19	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluoropentanesulfonic acid (PFPeS)	0.60	J I	1.9	0.28	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.54	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorooctanesulfonic acid (PFOS)	4.0		1.9	0.51	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorododecanesulfonic acid (PFDoS)	<0.92		1.9	0.92	ng/L		11/22/22 06:53	11/24/22 22:09	1
Perfluorooctanesulfonamide (FOSA)	<0.93		1.9	0.93	ng/L		11/22/22 06:53	11/24/22 22:09	1
NEtFOSA	<0.83		1.9	0.83	ng/L		11/22/22 06:53	11/24/22 22:09	1
NMeFOSA	<0.41		1.9	0.41	ng/L		11/22/22 06:53	11/24/22 22:09	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		11/22/22 06:53	11/24/22 22:09	1
NEtFOSAA	<1.2		4.7	1.2	ng/L		11/22/22 06:53	11/24/22 22:09	1
NMeFOSE	<1.3		3.8	1.3	ng/L		11/22/22 06:53	11/24/22 22:09	1
NEtFOSE	<0.81		1.9	0.81	ng/L		11/22/22 06:53	11/24/22 22:09	1
4:2 FTS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 22:09	1
6:2 FTS	<2.4		4.7	2.4	ng/L		11/22/22 06:53	11/24/22 22:09	1
8:2 FTS	<0.44		1.9	0.44	ng/L		11/22/22 06:53	11/24/22 22:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		11/22/22 06:53	11/24/22 22:09	1
HFPO-DA (GenX)	<1.4		3.8	1.4	ng/L		11/22/22 06:53	11/24/22 22:09	1
9Cl-PF3ONS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 22:09	1
11Cl-PF3OUdS	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 22:09	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	64		25 - 150				11/22/22 06:53	11/24/22 22:09	1
13C5 PFPeA	80		25 - 150				11/22/22 06:53	11/24/22 22:09	1
13C2 PFHxA	92		25 - 150				11/22/22 06:53	11/24/22 22:09	1
13C4 PFHpA	88		25 - 150				11/22/22 06:53	11/24/22 22:09	1

Eurofins Chicago

Client Sample Results

Client: Sigma Group Inc., The
 Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-13R

Lab Sample ID: 500-225090-4

Date Collected: 11/08/22 12:20

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOA	94		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C5 PFNA	92		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C2 PFDA	93		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C2 PFUnA	90		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C2 PFDoA	84		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C2 PFTeDA	87		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C3 PFBS	92		25 - 150	11/22/22 06:53	11/24/22 22:09	1
18O2 PFHxS	96		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C4 PFOS	96		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C8 FOSA	101		10 - 150	11/22/22 06:53	11/24/22 22:09	1
d3-NMeFOSAA	77		25 - 150	11/22/22 06:53	11/24/22 22:09	1
d5-NEtFOSAA	80		25 - 150	11/22/22 06:53	11/24/22 22:09	1
d-N-MeFOSA-M	78		10 - 150	11/22/22 06:53	11/24/22 22:09	1
d-N-EtFOSA-M	76		10 - 150	11/22/22 06:53	11/24/22 22:09	1
d7-N-MeFOSE-M	82		10 - 150	11/22/22 06:53	11/24/22 22:09	1
d9-N-EtFOSE-M	81		10 - 150	11/22/22 06:53	11/24/22 22:09	1
M2-4:2 FTS	136		25 - 150	11/22/22 06:53	11/24/22 22:09	1
M2-6:2 FTS	120		25 - 150	11/22/22 06:53	11/24/22 22:09	1
M2-8:2 FTS	104		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C3 HFPO-DA	85		25 - 150	11/22/22 06:53	11/24/22 22:09	1
13C2 10:2 FTS	82		25 - 150	11/22/22 06:53	11/24/22 22:09	1

General Chemistry

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Chromium, hexavalent (SW846 7196A)	<3.2		10	3.2	ug/L			11/09/22 12:01	1

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-14

Lab Sample ID: 500-225090-5

Date Collected: 11/08/22 12:35

Matrix: Water

Date Received: 11/09/22 10:30

Method: SW846 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.36		0.20	0.10	ug/L		11/14/22 15:43	11/16/22 21:26	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,4-Dioxane-d8	25		15 - 110				11/14/22 15:43	11/16/22 21:26	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	9.6		4.7	2.3	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluoropentanoic acid (PFPeA)	15		1.9	0.46	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorohexanoic acid (PFHxA)	9.2		1.9	0.54	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluoroheptanoic acid (PFHpA)	3.6		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorooctanoic acid (PFOA)	18		1.9	0.80	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorononanoic acid (PFNA)	0.38	J	1.9	0.25	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorotridecanoic acid (PFTTrDA)	<1.2		1.9	1.2	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorotetradecanoic acid (PFTeA)	<0.68		1.9	0.68	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorobutanesulfonic acid (PFBS)	5.7		1.9	0.19	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluoropentanesulfonic acid (PFPeS)	3.6		1.9	0.28	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorohexanesulfonic acid (PFHxS)	44		1.9	0.53	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	1.9	0.18	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorooctanesulfonic acid (PFOS)	98		1.9	0.51	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorododecanesulfonic acid (PFDoS)	<0.91		1.9	0.91	ng/L		11/22/22 06:53	11/24/22 22:19	1
Perfluorooctanesulfonamide (FOSA)	1.2	J	1.9	0.92	ng/L		11/22/22 06:53	11/24/22 22:19	1
NEtFOSA	<0.82		1.9	0.82	ng/L		11/22/22 06:53	11/24/22 22:19	1
NMeFOSA	<0.40		1.9	0.40	ng/L		11/22/22 06:53	11/24/22 22:19	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		11/22/22 06:53	11/24/22 22:19	1
NEtFOSAA	<1.2		4.7	1.2	ng/L		11/22/22 06:53	11/24/22 22:19	1
NMeFOSE	<1.3		3.8	1.3	ng/L		11/22/22 06:53	11/24/22 22:19	1
NEtFOSE	<0.80		1.9	0.80	ng/L		11/22/22 06:53	11/24/22 22:19	1
4:2 FTS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 22:19	1
6:2 FTS	<2.3		4.7	2.3	ng/L		11/22/22 06:53	11/24/22 22:19	1
8:2 FTS	<0.43		1.9	0.43	ng/L		11/22/22 06:53	11/24/22 22:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		11/22/22 06:53	11/24/22 22:19	1
HFPO-DA (GenX)	<1.4		3.8	1.4	ng/L		11/22/22 06:53	11/24/22 22:19	1
9CI-PF3ONS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 22:19	1
11CI-PF3OUdS	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 22:19	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	44		25 - 150				11/22/22 06:53	11/24/22 22:19	1
13C5 PFPeA	64		25 - 150				11/22/22 06:53	11/24/22 22:19	1
13C2 PFHxA	79		25 - 150				11/22/22 06:53	11/24/22 22:19	1

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Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-14

Lab Sample ID: 500-225090-5

Date Collected: 11/08/22 12:35

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFHpA	83		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C4 PFOA	92		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C5 PFNA	98		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C2 PFDA	94		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C2 PFUnA	94		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C2 PFDoA	76		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C2 PFTeDA	79		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C3 PFBS	83		25 - 150	11/22/22 06:53	11/24/22 22:19	1
18O2 PFHxS	92		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C4 PFOS	91		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C8 FOSA	94		10 - 150	11/22/22 06:53	11/24/22 22:19	1
d3-NMeFOSAA	71		25 - 150	11/22/22 06:53	11/24/22 22:19	1
d5-NEtFOSAA	78		25 - 150	11/22/22 06:53	11/24/22 22:19	1
d-N-MeFOSA-M	70		10 - 150	11/22/22 06:53	11/24/22 22:19	1
d-N-EtFOSA-M	70		10 - 150	11/22/22 06:53	11/24/22 22:19	1
d7-N-MeFOSE-M	71		10 - 150	11/22/22 06:53	11/24/22 22:19	1
d9-N-EtFOSE-M	71		10 - 150	11/22/22 06:53	11/24/22 22:19	1
M2-4:2 FTS	155	*5+	25 - 150	11/22/22 06:53	11/24/22 22:19	1
M2-6:2 FTS	167	*5+	25 - 150	11/22/22 06:53	11/24/22 22:19	1
M2-8:2 FTS	140		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C3 HFPO-DA	76		25 - 150	11/22/22 06:53	11/24/22 22:19	1
13C2 10:2 FTS	87		25 - 150	11/22/22 06:53	11/24/22 22:19	1

General Chemistry

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Chromium, hexavalent (SW846 7196A)	<3.2		10	3.2	ug/L			11/09/22 12:02	1

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-15

Lab Sample ID: 500-225090-6

Date Collected: 11/08/22 12:05

Matrix: Water

Date Received: 11/09/22 10:30

Method: SW846 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	<0.10		0.20	0.10	ug/L		11/14/22 15:43	11/16/22 21:47	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,4-Dioxane-d8	25		15 - 110				11/14/22 15:43	11/16/22 21:47	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.9		4.7	2.3	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluoropentanoic acid (PFPeA)	8.6		1.9	0.47	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorohexanoic acid (PFHxA)	7.5		1.9	0.55	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluoroheptanoic acid (PFHpA)	4.3		1.9	0.24	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorooctanoic acid (PFOA)	18		1.9	0.81	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorononanoic acid (PFNA)	1.2 J		1.9	0.26	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorotridecanoic acid (PFTTrDA)	<1.2		1.9	1.2	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorotetradecanoic acid (PFTeA)	<0.69		1.9	0.69	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorobutanesulfonic acid (PFBS)	0.84 J		1.9	0.19	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluoropentanesulfonic acid (PFPeS)	0.40 J		1.9	0.28	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorohexanesulfonic acid (PFHxS)	1.9		1.9	0.54	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorooctanesulfonic acid (PFOS)	2.0		1.9	0.51	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorodecanesulfonic acid (PFDS)	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorododecanesulfonic acid (PFDoS)	<0.92		1.9	0.92	ng/L		11/22/22 06:53	11/24/22 23:00	1
Perfluorooctanesulfonamide (FOSA)	<0.93		1.9	0.93	ng/L		11/22/22 06:53	11/24/22 23:00	1
NEtFOSA	<0.83		1.9	0.83	ng/L		11/22/22 06:53	11/24/22 23:00	1
NMeFOSA	<0.41		1.9	0.41	ng/L		11/22/22 06:53	11/24/22 23:00	1
NMeFOSAA	<1.1		4.7	1.1	ng/L		11/22/22 06:53	11/24/22 23:00	1
NEtFOSAA	<1.2		4.7	1.2	ng/L		11/22/22 06:53	11/24/22 23:00	1
NMeFOSE	<1.3		3.8	1.3	ng/L		11/22/22 06:53	11/24/22 23:00	1
NEtFOSE	<0.81		1.9	0.81	ng/L		11/22/22 06:53	11/24/22 23:00	1
4:2 FTS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 23:00	1
6:2 FTS	<2.4		4.7	2.4	ng/L		11/22/22 06:53	11/24/22 23:00	1
8:2 FTS	<0.44		1.9	0.44	ng/L		11/22/22 06:53	11/24/22 23:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		11/22/22 06:53	11/24/22 23:00	1
HFPO-DA (GenX)	<1.4		3.8	1.4	ng/L		11/22/22 06:53	11/24/22 23:00	1
9Cl-PF3ONS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 23:00	1
11Cl-PF3OUdS	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 23:00	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	91		25 - 150				11/22/22 06:53	11/24/22 23:00	1
13C5 PFPeA	99		25 - 150				11/22/22 06:53	11/24/22 23:00	1
13C2 PFHxA	100		25 - 150				11/22/22 06:53	11/24/22 23:00	1
13C4 PFHpA	100		25 - 150				11/22/22 06:53	11/24/22 23:00	1

Eurofins Chicago

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-15

Lab Sample ID: 500-225090-6

Date Collected: 11/08/22 12:05

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOA	97		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C5 PFNA	100		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C2 PFDA	95		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C2 PFUnA	89		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C2 PFDoA	77		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C2 PFTeDA	85		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C3 PFBS	97		25 - 150	11/22/22 06:53	11/24/22 23:00	1
18O2 PFHxS	101		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C4 PFOS	95		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C8 FOSA	102		10 - 150	11/22/22 06:53	11/24/22 23:00	1
d3-NMeFOSAA	70		25 - 150	11/22/22 06:53	11/24/22 23:00	1
d5-NEtFOSAA	73		25 - 150	11/22/22 06:53	11/24/22 23:00	1
d-N-MeFOSA-M	72		10 - 150	11/22/22 06:53	11/24/22 23:00	1
d-N-EtFOSA-M	73		10 - 150	11/22/22 06:53	11/24/22 23:00	1
d7-N-MeFOSE-M	80		10 - 150	11/22/22 06:53	11/24/22 23:00	1
d9-N-EtFOSE-M	80		10 - 150	11/22/22 06:53	11/24/22 23:00	1
M2-4:2 FTS	88		25 - 150	11/22/22 06:53	11/24/22 23:00	1
M2-6:2 FTS	82		25 - 150	11/22/22 06:53	11/24/22 23:00	1
M2-8:2 FTS	81		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C3 HFPO-DA	98		25 - 150	11/22/22 06:53	11/24/22 23:00	1
13C2 10:2 FTS	68		25 - 150	11/22/22 06:53	11/24/22 23:00	1

General Chemistry

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Chromium, hexavalent (SW846 7196A)	<3.2		10	3.2	ug/L			11/09/22 12:02	1

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: Duplicate

Lab Sample ID: 500-225090-7

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	11		4.8	2.3	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluoropentanoic acid (PFPeA)	25		1.9	0.47	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorohexanoic acid (PFHxA)	20		1.9	0.55	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluoroheptanoic acid (PFHpA)	9.7		1.9	0.24	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorooctanoic acid (PFOA)	46		1.9	0.81	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorononanoic acid (PFNA)	0.29	J	1.9	0.26	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorotridecanoic acid (PFTrDA)	<1.2		1.9	1.2	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorotetradecanoic acid (PFTeA)	<0.70		1.9	0.70	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorobutanesulfonic acid (PFBS)	0.81	J	1.9	0.19	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluoropentanesulfonic acid (PFPeS)	0.63	J	1.9	0.29	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.54	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.18		1.9	0.18	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorooctanesulfonic acid (PFOS)	4.9		1.9	0.51	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorononanesulfonic acid (PFNS)	<0.35		1.9	0.35	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorodecanesulfonic acid (PFDS)	<0.31		1.9	0.31	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorododecanesulfonic acid (PFDoS)	<0.92		1.9	0.92	ng/L		11/22/22 06:53	11/24/22 23:10	1
Perfluorooctanesulfonamide (FOSA)	<0.93		1.9	0.93	ng/L		11/22/22 06:53	11/24/22 23:10	1
NEtFOSA	<0.83		1.9	0.83	ng/L		11/22/22 06:53	11/24/22 23:10	1
NMeFOSA	<0.41		1.9	0.41	ng/L		11/22/22 06:53	11/24/22 23:10	1
NMeFOSAA	<1.1		4.8	1.1	ng/L		11/22/22 06:53	11/24/22 23:10	1
NEtFOSAA	<1.2		4.8	1.2	ng/L		11/22/22 06:53	11/24/22 23:10	1
NMeFOSE	<1.3		3.8	1.3	ng/L		11/22/22 06:53	11/24/22 23:10	1
NEtFOSE	<0.81		1.9	0.81	ng/L		11/22/22 06:53	11/24/22 23:10	1
4:2 FTS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 23:10	1
6:2 FTS	<2.4		4.8	2.4	ng/L		11/22/22 06:53	11/24/22 23:10	1
8:2 FTS	<0.44		1.9	0.44	ng/L		11/22/22 06:53	11/24/22 23:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.38		1.9	0.38	ng/L		11/22/22 06:53	11/24/22 23:10	1
HFPO-DA (GenX)	<1.4		3.8	1.4	ng/L		11/22/22 06:53	11/24/22 23:10	1
9CI-PF3ONS	<0.23		1.9	0.23	ng/L		11/22/22 06:53	11/24/22 23:10	1
11CI-PF3OUdS	<0.31		1.9	0.31	ng/L		11/22/22 06:53	11/24/22 23:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	59		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C5 PFPeA	85		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C2 PFHxA	89		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C4 PFHpA	93		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C4 PFOA	95		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C5 PFNA	99		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C2 PFDA	95		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C2 PFUnA	92		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C2 PFDoA	85		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C2 PFTeDA	90		25 - 150	11/22/22 06:53	11/24/22 23:10	1

Eurofins Chicago

Client Sample Results

Client: Sigma Group Inc., The
 Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: Duplicate

Lab Sample ID: 500-225090-7

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 PFBS	93		25 - 150	11/22/22 06:53	11/24/22 23:10	1
18O2 PFHxS	99		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C4 PFOS	94		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C8 FOSA	105		10 - 150	11/22/22 06:53	11/24/22 23:10	1
d3-NMeFOSAA	74		25 - 150	11/22/22 06:53	11/24/22 23:10	1
d5-NEtFOSAA	83		25 - 150	11/22/22 06:53	11/24/22 23:10	1
d-N-MeFOSA-M	77		10 - 150	11/22/22 06:53	11/24/22 23:10	1
d-N-EtFOSA-M	74		10 - 150	11/22/22 06:53	11/24/22 23:10	1
d7-N-MeFOSE-M	85		10 - 150	11/22/22 06:53	11/24/22 23:10	1
d9-N-EtFOSE-M	85		10 - 150	11/22/22 06:53	11/24/22 23:10	1
M2-4:2 FTS	157	*5+	25 - 150	11/22/22 06:53	11/24/22 23:10	1
M2-6:2 FTS	127		25 - 150	11/22/22 06:53	11/24/22 23:10	1
M2-8:2 FTS	110		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C3 HFPO-DA	86		25 - 150	11/22/22 06:53	11/24/22 23:10	1
13C2 10:2 FTS	91		25 - 150	11/22/22 06:53	11/24/22 23:10	1

Client Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: Equipment Blank

Lab Sample ID: 500-225090-8

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.2		4.6	2.2	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluoropentanoic acid (PFPeA)	<0.45		1.8	0.45	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorohexanoic acid (PFHxA)	<0.53		1.8	0.53	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorooctanoic acid (PFOA)	<0.77		1.8	0.77	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorononanoic acid (PFNA)	<0.25		1.8	0.25	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.8	1.0	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorotridecanoic acid (PFTrDA)	<1.2		1.8	1.2	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorotetradecanoic acid (PFTeA)	<0.67		1.8	0.67	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorohexanesulfonic acid (PFHxS)	<0.52		1.8	0.52	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorooctanesulfonic acid (PFOS)	<0.49		1.8	0.49	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.8	0.34	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorododecanesulfonic acid (PFDoS)	<0.88		1.8	0.88	ng/L		11/22/22 06:53	11/24/22 23:20	1
Perfluorooctanesulfonamide (FOSA)	<0.89		1.8	0.89	ng/L		11/22/22 06:53	11/24/22 23:20	1
NEtFOSA	<0.79		1.8	0.79	ng/L		11/22/22 06:53	11/24/22 23:20	1
NMeFOSA	<0.39		1.8	0.39	ng/L		11/22/22 06:53	11/24/22 23:20	1
NMeFOSAA	<1.1		4.6	1.1	ng/L		11/22/22 06:53	11/24/22 23:20	1
NEtFOSAA	<1.2		4.6	1.2	ng/L		11/22/22 06:53	11/24/22 23:20	1
NMeFOSE	<1.3		3.6	1.3	ng/L		11/22/22 06:53	11/24/22 23:20	1
NEtFOSE	<0.77		1.8	0.77	ng/L		11/22/22 06:53	11/24/22 23:20	1
4:2 FTS	<0.22		1.8	0.22	ng/L		11/22/22 06:53	11/24/22 23:20	1
6:2 FTS	<2.3		4.6	2.3	ng/L		11/22/22 06:53	11/24/22 23:20	1
8:2 FTS	<0.42		1.8	0.42	ng/L		11/22/22 06:53	11/24/22 23:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		11/22/22 06:53	11/24/22 23:20	1
HFPO-DA (GenX)	<1.4		3.6	1.4	ng/L		11/22/22 06:53	11/24/22 23:20	1
9Cl-PF3ONS	<0.22		1.8	0.22	ng/L		11/22/22 06:53	11/24/22 23:20	1
11Cl-PF3OUdS	<0.29		1.8	0.29	ng/L		11/22/22 06:53	11/24/22 23:20	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	90		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C5 PFPeA	96		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C2 PFHxA	92		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C4 PFHpA	92		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C4 PFOA	96		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C5 PFNA	92		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C2 PFDA	89		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C2 PFUnA	89		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C2 PFDoA	81		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C2 PFTeDA	87		25 - 150				11/22/22 06:53	11/24/22 23:20	1
13C3 PFBS	93		25 - 150				11/22/22 06:53	11/24/22 23:20	1
18O2 PFHxS	93		25 - 150				11/22/22 06:53	11/24/22 23:20	1

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Client Sample Results

Client: Sigma Group Inc., The
 Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: Equipment Blank

Lab Sample ID: 500-225090-8

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/09/22 10:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOS	92		25 - 150	11/22/22 06:53	11/24/22 23:20	1
13C8 FOSA	94		10 - 150	11/22/22 06:53	11/24/22 23:20	1
d3-NMeFOSAA	72		25 - 150	11/22/22 06:53	11/24/22 23:20	1
d5-NEtFOSAA	73		25 - 150	11/22/22 06:53	11/24/22 23:20	1
d-N-MeFOSA-M	72		10 - 150	11/22/22 06:53	11/24/22 23:20	1
d-N-EtFOSA-M	73		10 - 150	11/22/22 06:53	11/24/22 23:20	1
d7-N-MeFOSE-M	78		10 - 150	11/22/22 06:53	11/24/22 23:20	1
d9-N-EtFOSE-M	85		10 - 150	11/22/22 06:53	11/24/22 23:20	1
M2-4:2 FTS	80		25 - 150	11/22/22 06:53	11/24/22 23:20	1
M2-6:2 FTS	79		25 - 150	11/22/22 06:53	11/24/22 23:20	1
M2-8:2 FTS	77		25 - 150	11/22/22 06:53	11/24/22 23:20	1
13C3 HFPO-DA	95		25 - 150	11/22/22 06:53	11/24/22 23:20	1
13C2 10:2 FTS	77		25 - 150	11/22/22 06:53	11/24/22 23:20	1

Definitions/Glossary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Association Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

GC/MS Semi VOA

Prep Batch: 649887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-225090-1	MW-2A	Total/NA	Water	3510C	
500-225090-2	MW-2/2R	Total/NA	Water	3510C	
500-225090-3	MW-12R	Total/NA	Water	3510C	
500-225090-4	MW-13R	Total/NA	Water	3510C	
500-225090-5	MW-14	Total/NA	Water	3510C	
500-225090-6	MW-15	Total/NA	Water	3510C	
MB 480-649887/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-649887/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 650179

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-225090-1	MW-2A	Total/NA	Water	8270D SIM ID	649887
500-225090-2	MW-2/2R	Total/NA	Water	8270D SIM ID	649887
500-225090-3	MW-12R	Total/NA	Water	8270D SIM ID	649887
500-225090-4	MW-13R	Total/NA	Water	8270D SIM ID	649887
500-225090-5	MW-14	Total/NA	Water	8270D SIM ID	649887
500-225090-6	MW-15	Total/NA	Water	8270D SIM ID	649887
MB 480-649887/1-A	Method Blank	Total/NA	Water	8270D SIM ID	649887
LCS 480-649887/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	649887

LCMS

Prep Batch: 634650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-225090-1	MW-2A	Total/NA	Water	3535	
500-225090-2	MW-2/2R	Total/NA	Water	3535	
500-225090-3	MW-12R	Total/NA	Water	3535	
500-225090-4	MW-13R	Total/NA	Water	3535	
500-225090-5	MW-14	Total/NA	Water	3535	
500-225090-6	MW-15	Total/NA	Water	3535	
500-225090-7	Duplicate	Total/NA	Water	3535	
500-225090-8	Equipment Blank	Total/NA	Water	3535	
MB 320-634650/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-634650/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 635155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-225090-1	MW-2A	Total/NA	Water	537 (modified)	634650
500-225090-2	MW-2/2R	Total/NA	Water	537 (modified)	634650
500-225090-3	MW-12R	Total/NA	Water	537 (modified)	634650
500-225090-4	MW-13R	Total/NA	Water	537 (modified)	634650
500-225090-5	MW-14	Total/NA	Water	537 (modified)	634650
500-225090-6	MW-15	Total/NA	Water	537 (modified)	634650
500-225090-7	Duplicate	Total/NA	Water	537 (modified)	634650
500-225090-8	Equipment Blank	Total/NA	Water	537 (modified)	634650
MB 320-634650/1-A	Method Blank	Total/NA	Water	537 (modified)	634650
LCS 320-634650/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	634650

QC Association Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

General Chemistry

Analysis Batch: 684859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-225090-1	MW-2A	Total/NA	Water	7196A	
500-225090-2	MW-2/2R	Total/NA	Water	7196A	
500-225090-3	MW-12R	Total/NA	Water	7196A	
500-225090-4	MW-13R	Total/NA	Water	7196A	
500-225090-5	MW-14	Total/NA	Water	7196A	
500-225090-6	MW-15	Total/NA	Water	7196A	
MB 500-684859/9	Method Blank	Total/NA	Water	7196A	
LCS 500-684859/10	Lab Control Sample	Total/NA	Water	7196A	
500-225090-1 MS	MW-2A	Total/NA	Water	7196A	
500-225090-1 MSD	MW-2A	Total/NA	Water	7196A	

QC Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-649887/1-A
Matrix: Water
Analysis Batch: 650179

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 649887

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	<0.10		0.20	0.10	ug/L		11/14/22 15:43	11/16/22 13:40	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	23		15 - 110				11/14/22 15:43	11/16/22 13:40	1

Lab Sample ID: LCS 480-649887/2-A
Matrix: Water
Analysis Batch: 650179

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 649887

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.00	2.15		ug/L		108	40 - 140
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
1,4-Dioxane-d8	26		15 - 110				

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-634650/1-A
Matrix: Water
Analysis Batch: 635155

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 634650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorotridecanoic acid (PFTTrDA)	<1.3		2.0	1.3	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		11/22/22 06:53	11/24/22 18:36	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		11/22/22 06:53	11/24/22 18:36	1
NEtFOSA	<0.87		2.0	0.87	ng/L		11/22/22 06:53	11/24/22 18:36	1
NMeFOSA	<0.43		2.0	0.43	ng/L		11/22/22 06:53	11/24/22 18:36	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		11/22/22 06:53	11/24/22 18:36	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		11/22/22 06:53	11/24/22 18:36	1
NMeFOSE	<1.4		4.0	1.4	ng/L		11/22/22 06:53	11/24/22 18:36	1

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QC Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-634650/1-A
Matrix: Water
Analysis Batch: 635155

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 634650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSE	<0.85		2.0	0.85	ng/L		11/22/22 06:53	11/24/22 18:36	1
4:2 FTS	<0.24		2.0	0.24	ng/L		11/22/22 06:53	11/24/22 18:36	1
6:2 FTS	<2.5		5.0	2.5	ng/L		11/22/22 06:53	11/24/22 18:36	1
8:2 FTS	<0.46		2.0	0.46	ng/L		11/22/22 06:53	11/24/22 18:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		11/22/22 06:53	11/24/22 18:36	1
HFPO-DA (GenX)	<1.5		4.0	1.5	ng/L		11/22/22 06:53	11/24/22 18:36	1
9CI-PF3ONS	<0.24		2.0	0.24	ng/L		11/22/22 06:53	11/24/22 18:36	1
11CI-PF3OUdS	<0.32		2.0	0.32	ng/L		11/22/22 06:53	11/24/22 18:36	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	97		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C5 PFPeA	99		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C2 PFHxA	101		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C4 PFHpA	98		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C4 PFOA	95		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C5 PFNA	95		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C2 PFDA	94		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C2 PFUnA	93		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C2 PFDoA	91		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C2 PFTeDA	91		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C3 PFBS	97		25 - 150	11/22/22 06:53	11/24/22 18:36	1
18O2 PFHxS	96		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C4 PFOS	94		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C8 FOSA	97		10 - 150	11/22/22 06:53	11/24/22 18:36	1
d3-NMeFOSAA	74		25 - 150	11/22/22 06:53	11/24/22 18:36	1
d5-NEtFOSAA	75		25 - 150	11/22/22 06:53	11/24/22 18:36	1
d-N-MeFOSA-M	78		10 - 150	11/22/22 06:53	11/24/22 18:36	1
d-N-EtFOSA-M	80		10 - 150	11/22/22 06:53	11/24/22 18:36	1
d7-N-MeFOSE-M	87		10 - 150	11/22/22 06:53	11/24/22 18:36	1
d9-N-EtFOSE-M	90		10 - 150	11/22/22 06:53	11/24/22 18:36	1
M2-4:2 FTS	78		25 - 150	11/22/22 06:53	11/24/22 18:36	1
M2-6:2 FTS	81		25 - 150	11/22/22 06:53	11/24/22 18:36	1
M2-8:2 FTS	83		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C3 HFPO-DA	106		25 - 150	11/22/22 06:53	11/24/22 18:36	1
13C2 10:2 FTS	79		25 - 150	11/22/22 06:53	11/24/22 18:36	1

Lab Sample ID: LCS 320-634650/2-A
Matrix: Water
Analysis Batch: 635155

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 634650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	40.0	43.3		ng/L		108	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	39.1		ng/L		98	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	40.8		ng/L		102	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	41.9		ng/L		105	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	40.4		ng/L		101	60 - 135
Perfluorononanoic acid (PFNA)	40.0	40.4		ng/L		101	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	40.8		ng/L		102	60 - 135

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QC Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-634650/2-A
Matrix: Water
Analysis Batch: 635155

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 634650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroundecanoic acid (PFUnA)	40.0	41.8		ng/L		104	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	44.4		ng/L		111	60 - 135
Perfluorotridecanoic acid (PFTTrDA)	40.0	41.3		ng/L		103	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	40.5		ng/L		101	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	36.8		ng/L		104	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.6	38.4		ng/L		102	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.7		ng/L		98	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.2		ng/L		113	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	39.2		ng/L		105	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.0		ng/L		109	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.4		ng/L		110	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	42.8		ng/L		110	60 - 135
Perfluorooctanesulfonamide (FOSA)	40.0	40.7		ng/L		102	60 - 135
NEtFOSA	40.0	42.4		ng/L		106	60 - 135
NMeFOSA	40.0	45.5		ng/L		114	60 - 135
NMeFOSAA	40.0	38.7		ng/L		97	60 - 135
NEtFOSAA	40.0	39.6		ng/L		99	60 - 135
NMeFOSE	40.0	42.7		ng/L		107	60 - 135
NEtFOSE	40.0	39.6		ng/L		99	60 - 135
4:2 FTS	37.5	35.0		ng/L		93	60 - 135
6:2 FTS	38.1	42.3		ng/L		111	60 - 135
8:2 FTS	38.4	41.3		ng/L		107	60 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.8	45.8		ng/L		121	60 - 135
HFPO-DA (GenX)	40.0	39.5		ng/L		99	60 - 135
9Cl-PF3ONS	37.4	44.1		ng/L		118	60 - 135
11Cl-PF3OUdS	37.8	43.3		ng/L		115	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	98		25 - 150
13C5 PFPeA	101		25 - 150
13C2 PFHxA	97		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	95		25 - 150
13C5 PFNA	98		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	97		25 - 150
13C2 PFDoA	84		25 - 150
13C2 PFTeDA	87		25 - 150

Eurofins Chicago

QC Sample Results

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-634650/2-A
Matrix: Water
Analysis Batch: 635155

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 634650

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 PFBS	98		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	86		25 - 150
13C8 FOSA	96		10 - 150
d3-NMeFOSAA	80		25 - 150
d5-NEtFOSAA	76		25 - 150
d-N-MeFOSA-M	68		10 - 150
d-N-EtFOSA-M	71		10 - 150
d7-N-MeFOSE-M	86		10 - 150
d9-N-EtFOSE-M	87		10 - 150
M2-4:2 FTS	82		25 - 150
M2-6:2 FTS	72		25 - 150
M2-8:2 FTS	78		25 - 150
13C3 HFPO-DA	106		25 - 150
13C2 10:2 FTS	71		25 - 150

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 500-684859/9
Matrix: Water
Analysis Batch: 684859

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	<3.2		10	3.2	ug/L			11/09/22 11:58	1

Lab Sample ID: LCS 500-684859/10
Matrix: Water
Analysis Batch: 684859

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chromium, hexavalent	250	256		ug/L		102	85 - 115

Lab Sample ID: 500-225090-1 MS
Matrix: Water
Analysis Batch: 684859

Client Sample ID: MW-2A
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chromium, hexavalent	<3.2	H	250	238		ug/L		95	85 - 115

Lab Sample ID: 500-225090-1 MSD
Matrix: Water
Analysis Batch: 684859

Client Sample ID: MW-2A
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chromium, hexavalent	<3.2	H	250	242		ug/L		97	85 - 115	2	20

Lab Chronicle

Client: Sigma Group Inc., The
 Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-2A

Lab Sample ID: 500-225090-1

Date Collected: 11/08/22 11:58

Matrix: Water

Date Received: 11/09/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			649887	SJM	EET BUF	11/14/22 15:43
Total/NA	Analysis	8270D SIM ID		1	650179	RJS	EET BUF	11/16/22 19:57
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 21:39
Total/NA	Analysis	7196A		1	684859	BC	EET CHI	11/09/22 11:59

Client Sample ID: MW-2/2R

Lab Sample ID: 500-225090-2

Date Collected: 11/08/22 12:15

Matrix: Water

Date Received: 11/09/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			649887	SJM	EET BUF	11/14/22 15:43
Total/NA	Analysis	8270D SIM ID		1	650179	RJS	EET BUF	11/16/22 20:19
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 21:49
Total/NA	Analysis	7196A		1	684859	BC	EET CHI	11/09/22 12:00

Client Sample ID: MW-12R

Lab Sample ID: 500-225090-3

Date Collected: 11/08/22 11:45

Matrix: Water

Date Received: 11/09/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			649887	SJM	EET BUF	11/14/22 15:43
Total/NA	Analysis	8270D SIM ID		1	650179	RJS	EET BUF	11/16/22 20:42
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 21:59
Total/NA	Analysis	7196A		1	684859	BC	EET CHI	11/09/22 12:01

Client Sample ID: MW-13R

Lab Sample ID: 500-225090-4

Date Collected: 11/08/22 12:20

Matrix: Water

Date Received: 11/09/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			649887	SJM	EET BUF	11/14/22 15:43
Total/NA	Analysis	8270D SIM ID		1	650179	RJS	EET BUF	11/16/22 21:04
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 22:09
Total/NA	Analysis	7196A		1	684859	BC	EET CHI	11/09/22 12:01

Lab Chronicle

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Client Sample ID: MW-14

Date Collected: 11/08/22 12:35

Date Received: 11/09/22 10:30

Lab Sample ID: 500-225090-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			649887	SJM	EET BUF	11/14/22 15:43
Total/NA	Analysis	8270D SIM ID		1	650179	RJS	EET BUF	11/16/22 21:26
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 22:19
Total/NA	Analysis	7196A		1	684859	BC	EET CHI	11/09/22 12:02

Client Sample ID: MW-15

Date Collected: 11/08/22 12:05

Date Received: 11/09/22 10:30

Lab Sample ID: 500-225090-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			649887	SJM	EET BUF	11/14/22 15:43
Total/NA	Analysis	8270D SIM ID		1	650179	RJS	EET BUF	11/16/22 21:47
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 23:00
Total/NA	Analysis	7196A		1	684859	BC	EET CHI	11/09/22 12:02

Client Sample ID: Duplicate

Date Collected: 11/08/22 00:00

Date Received: 11/09/22 10:30

Lab Sample ID: 500-225090-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 23:10

Client Sample ID: Equipment Blank

Date Collected: 11/08/22 00:00

Date Received: 11/09/22 10:30

Lab Sample ID: 500-225090-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			634650	EJR	EET SAC	11/22/22 06:53
Total/NA	Analysis	537 (modified)		1	635155	D1R	EET SAC	11/24/22 23:20

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600
 EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200
 EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Laboratory: Eurofins Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-23

Laboratory: Eurofins Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998310390	08-31-23

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

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ORIGIN ID-RRLA (262) 202-5955
IAN EVANS
EUROFINS TESTAMERICA
4125 N 124TH ST.
SUITE F (REAR)
BROOKFIELD, WI 53005
UNITED STATES US

SHIP DATE: 08NOV22
ACTWGT: 57.05 LB
CAD: 0269688/CAFE3616

BILL RECEIPT



500-225090 Waybi

TO **SAMPLE RECEIPT**
EUROFINS
2417 BOND ST.

UNIVERSITY PARK IL 60484

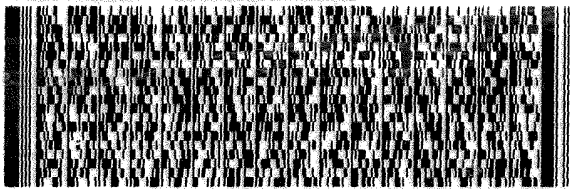
(262) 202-5955

REF:

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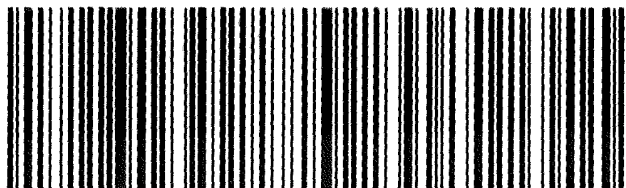
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Eurofins Chicago

2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

Chain of Custody Record



Environment Testing
America

Client Information		Sampler: TOM McCoy		Lab PM: Fredrick, Sandie		Carrier Tracking No(s):		COC No: 500-106336-45211.1	
Client Contact: Me'le'sa Greene		Phone: 414-643-4129		E-Mail: Sandra.Fredrick@et.eurofinsus.com		State of Origin: WI		Page 1 of 1	
Company: Sigma Group Inc., The		PWSID:		Analysis Requested		Barcode:		Job #:	
Address: 1300 West Canal Street		Due Date Requested:		TAT Requested (days):		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Observation Codes:	
City: Milwaukee		PO #:		Purchase Order not required		WO #:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)	
State, Zip: WI, 53233		Project #:		Project #:		Project #:		Other:	
Phone: 414-643-4113(Tel)		SSOW#:		Sample Identification		Sample Date		Sample Time	
Email: mgreene@thesigmagroup.com		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Special Instructions/Note:	
Project Name: Project 11516 Wisconsin Groundwater		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Site:		Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by: <i>[Signature]</i> Date/Time: 11/8/22 13:30 Company: Sigma		Relinquished by: <i>[Signature]</i> Date/Time: 11-8-22 1700 Company: Eurofins		Received by: <i>[Signature]</i> Date/Time: 11-8-22 1330 Company: Eurofins		Received by: <i>[Signature]</i> Date/Time: 11-9-22 0935 Company: EETSA		Relinquished by: <i>[Signature]</i> Date/Time: _____ Company: _____	
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.: 2051961		Cooler Temperature(s) °C and Other Remarks: 1.8°C		Total Number of samples (bars):		PFC_IDA_WI - PFAS, Standard List (33 analytes)	

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11/30/2022



Eurofins Chicago

2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

Chain of Custody Record



500-225090 Chain of Custody

euofins

Environment Testing
America

Client Information		Sampler: <i>TOM McCloy</i>		Lab PM: Fredrick, Sandie		.OC No: 500-106336-45211.1					
Client Contact: Me'le'sa Greene		Phone: <i>414-643-4129</i>		E-Mail: Sandra.Fredrick@et.eurofinsus.com		Page: Page 1 of 1					
Company: Sigma Group Inc., The		PWSID:		State of Origin: <i>WI</i>		Job #:					
Address: 1300 West Canal Street		Due Date Requested:		Analysis Requested				Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)			
City: Milwaukee		TAT Requested (days):									
State, Zip: WI, 53233		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		PFC_IDA_WI - PFAS, Standard List (33 analytes) 8270D_SIM_MS_ID - 1,4-Dioxane 7196A - Chromium, Hexavalent (24hr hold)				Other:			
Phone: 414-643-4113(Tel)		PO #:									
Email: mgreene@thesigmagroup.com		Purchase Order not required		Total Number of Containers				Special Instructions/Note:			
Project Name: Project 11516 Wisconsin Groundwater		WO #:									
Site:		Project #: 50020741		Total Number of Containers				Special Instructions/Note:			
		SSOW#:									
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, AA=Air)		Total Number of Containers	
										Preservation Code	
<i>MW-2A</i>		<i>11/8/22</i>		<i>11:58</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> X	
<i>MW-2/R</i>		<i>11/8/22</i>		<i>12:15</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> X	
<i>MW-12R</i>		<i>11/8/22</i>		<i>11:45</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> X	
<i>MW-13R</i>		<i>11/8/22</i>		<i>12:20</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> X	
<i>MW-14</i>		<i>11/8/22</i>		<i>12:35</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> X	
<i>MW-15</i>		<i>11/8/22</i>		<i>12:05</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> X	
<i>Duplicate</i>		<i>11/8/22</i>		<i>-</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X	
<i>Equipment Blank</i>		<i>11/8/22</i>		<i>-</i>		<i>Water</i>		<i>Water</i>		<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> X	
						<i>Water</i>					
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						<i>Water</i>					
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)				Special Instructions/QC Requirements:							
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
Relinquished by: <i>[Signature]</i>		Date/Time: <i>11/8/22 13:30</i>		Company: <i>Sigma</i>		Received by: <i>[Signature]</i>		Date/Time: <i>11-8-22 1330</i>		Company: <i>Eurofins</i>	
Relinquished by: <i>[Signature]</i>		Date/Time: <i>11-8-22 1700</i>		Company: <i>Eurofins</i>		Received by: <i>[Signature]</i>		Date/Time: <i>11/9/22 1000</i>		Company: <i>TA</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <i>2.0 # ICE</i>							

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11/30/2022



Login Sample Receipt Checklist

Client: Sigma Group Inc., The

Job Number: 500-225090-1

Login Number: 225090

List Number: 1

Creator: Scott, Sherri L

List Source: Eurofins Chicago

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Sigma Group Inc., The

Job Number: 500-225090-1

Login Number: 225090

List Number: 4

Creator: Kolb, Chris M

List Source: Eurofins Buffalo

List Creation: 11/12/22 03:59 PM

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.0 ir gun #1 ice
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	True	

Login Sample Receipt Checklist

Client: Sigma Group Inc., The

Job Number: 500-225090-1

Login Number: 225090

List Number: 2

Creator: Simmons, Jason C

List Source: Eurofins Sacramento

List Creation: 11/09/22 06:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2058386
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Sigma Group Inc., The

Job Number: 500-225090-1

Login Number: 225090

List Source: Eurofins Sacramento

List Number: 3

Creator: Simmons, Jason C

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2051961
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.8c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Job: 500-225090 Field Sheet

Tracking #: 6155 6317 0246

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: 66 Corr. Factor: (+/-) N/A °C
 Ice Wet Gel _____ Other _____
 Cooler Custody Seal: 2051961
 Cooler ID: _____
 Temp Observed: 1.8 °C Corrected: 1.8 °C
 From: Temp Blank Sample

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: SO Date: 11-9-22

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples require splitting/compositing?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: SO Date: 11-9-22

Notes: Sample container
client ID's missing
collection time.
#1 → #8
11-9-22

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Log Release checked in TALS?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: SO Date: 11-9-22



Isotope Dilution Summary

Client: Sigma Group Inc., The
Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DXE (15-110)
500-225090-1	MW-2A	27
500-225090-2	MW-2/2R	18
500-225090-3	MW-12R	22
500-225090-4	MW-13R	25
500-225090-5	MW-14	25
500-225090-6	MW-15	25
LCS 480-649887/2-A	Lab Control Sample	26
MB 480-649887/1-A	Method Blank	23

Surrogate Legend

DXE = 1,4-Dioxane-d8

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-225090-1	MW-2A	52	70	83	89	94	91	93	90
500-225090-2	MW-2/2R	28	46	59	61	71	70	74	74
500-225090-3	MW-12R	42	66	85	88	99	105	108	115
500-225090-4	MW-13R	64	80	92	88	94	92	93	90
500-225090-5	MW-14	44	64	79	83	92	98	94	94
500-225090-6	MW-15	91	99	100	100	97	100	95	89
500-225090-7	Duplicate	59	85	89	93	95	99	95	92
500-225090-8	Equipment Blank	90	96	92	92	96	92	89	89
LCS 320-634650/2-A	Lab Control Sample	98	101	97	99	95	98	97	97
MB 320-634650/1-A	Method Blank	97	99	101	98	95	95	94	93

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
500-225090-1	MW-2A	79	74	84	87	86	97	76	83
500-225090-2	MW-2/2R	61	48	59	69	72	73	62	71
500-225090-3	MW-12R	102	94	89	97	98	100	110	125
500-225090-4	MW-13R	84	87	92	96	96	101	77	80
500-225090-5	MW-14	76	79	83	92	91	94	71	78
500-225090-6	MW-15	77	85	97	101	95	102	70	73
500-225090-7	Duplicate	85	90	93	99	94	105	74	83
500-225090-8	Equipment Blank	81	87	93	93	92	94	72	73
LCS 320-634650/2-A	Lab Control Sample	84	87	98	92	86	96	80	76
MB 320-634650/1-A	Method Blank	91	91	97	96	94	97	74	75

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFm (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	HFPODA (25-150)
500-225090-1	MW-2A	71	69	68	70	145	150	137	80
500-225090-2	MW-2/2R	47	45	43	45	113	148	151 *5+	60
500-225090-3	MW-12R	77	80	71	81	193 *5+	235 *5+	260 *5+	88
500-225090-4	MW-13R	78	76	82	81	136	120	104	85
500-225090-5	MW-14	70	70	71	71	155 *5+	167 *5+	140	76
500-225090-6	MW-15	72	73	80	80	88	82	81	98

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Isotope Dilution Summary

Client: Sigma Group Inc., The
 Project/Site: Project 11516 Wisconsin Groundwater

Job ID: 500-225090-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	HFPODA (25-150)
500-225090-7	Duplicate	77	74	85	85	157 *5+	127	110	86
500-225090-8	Equipment Blank	72	73	78	85	80	79	77	95
LCS 320-634650/2-A	Lab Control Sample	68	71	86	87	82	72	78	106
MB 320-634650/1-A	Method Blank	78	80	87	90	78	81	83	106

		M102FTS (25-150)
500-225090-1	MW-2A	104
500-225090-2	MW-2/2R	88
500-225090-3	MW-12R	218 *5+
500-225090-4	MW-13R	82
500-225090-5	MW-14	87
500-225090-6	MW-15	68
500-225090-7	Duplicate	91
500-225090-8	Equipment Blank	77
LCS 320-634650/2-A	Lab Control Sample	71
MB 320-634650/1-A	Method Blank	79

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOA = d3-NMeFOA
- d5NEFOA = d5-NEtFOA
- dMeFOA = d-N-MeFOA-M
- dEtFOA = d-N-EtFOA-M
- NMFM = d7-N-MeFOSE-M
- NEFM = d9-N-EtFOSE-M
- M242FTS = M2-4:2 FTS
- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- HFPODA = 13C3 HFPO-DA
- M102FTS = 13C2 10:2 FTS