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Mr. Joshua Vaccaro
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203-2999

2022 Periodic Review Report
Cascades Containerboard Packaging Inc. - Frontier Site (formerly Norampac)
NYSDEC Site Number 932110

Dear Mr. Vaccaro:

Pursuant to the Site Management Plan - Frontier Chemical Site, Niagara Falls, New York (SMP) dated April 23, 2014, by GHD (formerly Conestoga-Rovers & Associates [CRA]), this correspondence provides the 2022 Periodic Review Report (PRR) for the Cascades Containerboard Packaging Inc. (Cascades) Facility (Former Frontier Chemical Site) located in Niagara Falls, New York (Site Number 932110). This PRR and Institutional Controls/Engineering Controls (IC/EC) Certification presents the field activities and monitoring results for the annual monitoring period of November 18, 2021 through November 18, 2022.

1. Introduction

The Frontier Chemical Royal Avenue Site Potentially Responsible Party (PRP) Group (the Frontier Group) entered into an Order on Consent (Index #89-0571-00-01, executed on August 15, 2008) with the New York State Department of Environmental Conservation (NYSDEC) to perform additional Site characterization and remediation of the conditions at the Cascades site (Site). The Site was previously referred to as the Norampac Facility in the 2015 PRR, and has been referred to as the Cascades Containerboard Packaging Inc. – Frontier Site since 2016. The Frontier Group consisted of the Site owner and numerous parties who performed the additional investigations and completed the remediation of the Site in accordance with the approved Remedial Design Report (CRA-February 2013). The Site is now owned and maintained by Cascades. The Site is a 9-acre property located in an industrialized area of Niagara Falls, New York.

Following completion of the additional Site characterization, the Frontier Group worked with the NYSDEC to develop and implement the various components of the Site remedy. The overburden and shallow bedrock groundwater remedy was implemented as specified in the 2006 Record of Decision (ROD). The deep bedrock groundwater, designated as OU2, was investigated, and a remedial action consisting of monitored natural attenuation was determined to be the appropriate remedy and set forth in the OU2 ROD (March 2011). For the source area soil, a remedy consisting of excavation and ex situ thermal treatment was selected and implemented as the appropriate remedy.

After completion of the remedial work described in the Remedial Design Report, the Remedial Action Objectives were met although some minimal residual contamination remains in place at subsurface locations on the Site, which is hereafter referred to as "residual material". A SMP was prepared to manage the residual material at the Site until the Environmental Easement is removed in accordance with ECL Article 71, Title 36.

This 2022 PRR presents the measures taken in 2022 to evaluate the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site and to assess the conditions of the asphalt/concrete and soil cover system at the Site.

2. Site Overview and Surface Cover Description

The Cascades Facility is located in an industrial area of the City of Niagara Falls, County of Niagara, New York and is identified as Block 1 and Lot 6 on the Niagara County Tax Map (160.09). The Site is an approximately 9-acre area parcel bordered to the north and northwest by Cascades, to the west by the Greenpac Mill, LLC, to the south by Royal Avenue (beyond which is an industrial site, Praxair Inc.), and to the east by 47th Street (beyond which is an industrial site, Covanta Niagara).

After Site remediation activities were completed in early 2014, the SMP provided a series of ECs and ICs. The ROD requires that the Site surface either be covered with the existing asphalt or concrete surface or 1 foot of clean fill material. At the completion of excavation activities associated with the source area soil remediation that was completed in 2014, the cover system was made compliant with the ROD. The existing undisturbed asphalt and concrete-covered areas were allowed to remain "as is". All previously existing soil cover areas and the area disturbed due to the excavation of the source area soil were covered with clean fill material. Recycled concrete and hard demolition material from the Site remediation project were also used as part of the 1 foot of clean surface material that was placed over all previously existing and post-excavation soil cover areas. The recycled concrete/demolition material was crushed to 2-inch-minus prior to placement and compacted in place. The remainder of the 1 foot of clean cover was completed using imported crushed stone from a quarry.

Adherence to these ICs on the Site is required by the Environmental Easement and is being implemented under the SMP. The ICs that are implemented are as follows:

- Compliance with the Environmental Easement and the SMP by the Grantor (Site owner) and the Grantor's successors and assigns (Cascades).
- All ECs must be operated and maintained as specified in the SMP.
- All ECs on the Controlled Property must be inspected at a frequency and in the manner defined in the SMP.
- Groundwater and other environmental or public health monitoring must be performed as defined in the SMP.
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in the manner defined in the SMP.

ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The Site has a series of ICs in the form of Site restrictions. Adherence to these ICs is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- The industrial zoned property may only be used for industrial use provided that the long-term ECs and ICs included in the SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted, restricted residential, or commercial use without additional evaluation (including possible additional remediation) and amendment of the Environmental Easement, as approved by the NYSDEC.
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP.
- The use of the groundwater underlying the property as a source of potable or process water is prohibited without treatment rendering it safe for the intended use as determined by the NYSDEC, New York State Department of Health (NYSDOH), or Niagara County Health Department.
- The potential for vapor intrusion must be evaluated for any building developed on the Site in the future, and any potential impacts that are identified must be monitored or managed through implementation of appropriate vapor mitigation measures.
- Vegetable gardens and farming on the property are prohibited.

- The Site owner will submit to NYSDEC a written statement that certifies, under penalty of perjury, that:
- Controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC.
- Nothing has occurred that impairs the ability of the controls to protect public health and the environment or that constitutes a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.1 2020 Site Construction

During the 2020 reporting period, the site cover at the former Frontier site was changed from an asphalt/concrete cover system to solely a concrete cover system. The Environmental Service Group (ESG), under the administration of GreenPac Mill LLC (Greenpac), installed an 8-inch thick reinforced concrete pad over the majority of the former Frontier Site, including the areas of excavation during the 2013/2014 Site remediation activities. The concrete pad was installed for the purpose of staging cardboard and other packing materials on the former Frontier Site. A soil berm (comprised of on-Site soils) was constructed along the south perimeter of the Site. The western side of the Site retained a grass cover, with a settling pond constructed south of the GreenPac Mill.

As part of the installation of the new concrete pad, the elevations of several on-Site wells were altered from being stick-up wells to being flush with the new concrete surface. The following wells were altered from being a stick-up well to being a flush-mount well:

- MW90-1A
- MW90-1B
- MW88-8A
- MW88-8B
- MW88-12A
- MW88-12B
- MW88-9A
- MW88-9B
- BH87-5A
- MW1D-08

The following wells remained in a grassy area, but the elevations were altered during the construction activities:

- MW-13
- MW01-9A
- MW-9
- MW1-C-08

Monitoring wells MW88-13A and MW-11 are located along the south perimeter of the Site, where the new soil berm was constructed. As a result, the elevations of both wells were raised so that they are above the new ground surface elevation on the south side of the berm.

Once the construction and well alterations were complete, EnSol Inc. conducted a survey of the new elevations of the altered wells, in addition to all other Site wells whose elevations had not been altered. The new elevations were used to create groundwater contours for the May and November Semiannual Discharge Reports to the Niagara Falls Water Board (NFWB), which are discussed in Section 4.0.

2.2 2022 Site Activities

As part of the 2021 PRR for the Cascades site, a site inspection was performed in October 2021. In the NYSDEC's acceptance letter of the 2021 PRR (dated February 3, 2022), the NYSDEC indicated that repairs were required for monitoring wells MW-13, MW1C-08, MW-9, and MW01-9A. The acceptance letter also indicated that MW-13 and MW1C-08 had been broken at couplings at the ground surface level, allowing surface water and dirt into the monitoring wells, and that both wells should be re-developed prior to the 2022 sampling event.

In September 2022, Greenpac retained ESG to perform the well upgrades requested in the 2021 PRR response letter. ESG converted MW-13 and MW1C-08 from flush-mount wells to stickup wells along the east perimeter of the Site, and concrete pads were poured around the bases of the new well boxes to prevent them from being broken off the base. New concrete pads were also poured around the bases of MW-9 and MW01-9A. These new concrete pads eliminated the instability of the 4-inch well boxes at MW-9 and MW01-9A.

In addition to the four wells referenced in the 2021 PRR response letter, adjustments were also made to monitoring well BH87-3A, located in the southwest corner of the site. During the April 2022 semi-annual sampling event, damage was observed to both the well box and well riser at a point above the ground surface. ESG made repairs to the well box and well riser, extending both to a higher elevation than the well had been previously.

ESG retained EnSol, Inc. to survey the new measuring point elevations for the three wells (MW-13, MW1C-08, and BH87-3A) whose elevations had been altered during the September 2022 well repair activities. EnSol also re-developed MW-13 and MW1C-08 in September 2022, prior to the October 2022 annual and semi-annual sampling events.

A summary letter report detailing EnSol's well development and surveying activities was submitted to ESG and Greenpac on September 23, 2022. This summary letter report is included in the 2022 PRR as Attachment A.

3. Evaluate Remedy Performance, Effectiveness, and Protectiveness

In accordance with the SMP, annual inspections are made of the asphalt/concrete cover system, soil cover system, and monitoring wells at the Site. The 2022 annual inspection was conducted on October 6, 2022. A copy of the annual inspection report is presented in Attachment B.

The 2022 Site Inspection indicated no issues with site deterioration, obstruction, potholes, or drainage issues, erosion, animal burrows, or damage to the perimeter fence. All site wells were observed to be in good condition. No repairs or actions were observed to be required during the 2022 site inspection.

4. Monitoring Plan Compliance

Commencing in November 2010, groundwater samples have been collected on a semiannual basis from eight on-Site wells in the A-Zone and B-Zone of the bedrock formation at the Site, in accordance with the monitoring plan provided in the SMP. The results of the semiannual groundwater monitoring were used to calculate the volume of groundwater and the chemical loading associated with the groundwater that discharges into the Falls Street Tunnel and the 47th Street Tunnel, which are located immediately adjacent to the Cascades Site. Semiannual Groundwater Discharge Reports are submitted to the NFWB. In addition to the semiannual groundwater sampling, annual groundwater samples were collected from three on-Site deep groundwater monitoring wells (C-Zone). As stated in the SMP, the annual sampling of the deep groundwater monitoring wells would continue for a period of 5 years, starting in 2014 and continuing until 2018. Thereafter, a determination would be made as to the need for and frequency of future sampling. Based on the results of the 2021 annual sampling, it was determined that the annual sampling of the C-Zone wells would continue in 2022.

4.1 Semiannual Groundwater Sampling

Semiannual groundwater sampling was performed on April 5, 2022, and October 4-6, 2022. The eight wells were sampled for Site-Specific Parameter List (SSPL) volatile organic compounds (VOCs), Target Analyte List (TAL) metals, and total phenols and in accordance with Environmental Protection Act (EPA) Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. The calculated groundwater volumes and

chemical loadings were presented in the Semiannual Groundwater Discharge Reports submitted to the NFWB on May 25, 2022, and November 29, 2022. For both Semiannual Groundwater Discharge Reports, the calculated groundwater volumes and chemical loadings were compared to the discharge limitations and monitoring requirements presented in the NFWB Significant Industrial User (SIU) Permit #78, which was issued by the NFWB to Cascades Containerboard Packaging, Inc. - Frontier Site, effective on October 2, 2020. There were no exceedances of the discharge limitations and monitoring requirements in either the May or the November reports.

The May 2022 and November 2022 Semiannual Groundwater Discharge Reports are both presented in Attachment C.

In accordance with the current schedule, semiannual sampling events will occur in April and October 2023. Semiannual groundwater discharge reports will be submitted to the NFWB in May and November 2023.

4.1.1 Total Concentration Trends – Semiannual Groundwater Sampling

In the NYSDEC's Acceptance letter for the 2019 PRR (dated February 11, 2020), the NYSDEC requested that trend plots be included for all wells monitored under the current SMP. Trend plots had previously been provided for the annual sampling of three C-Zone wells (discussed in Section 4.2). Based on the request by the NYSDEC, GHD generated trend plots of SSPL VOCs concentrations for the four A-Zone wells (BH87-3A, MW01-9A, MW88-13A, and BH87-28) and four B-Zone wells (MW-13, BH87-3B, MW-9, and MW-12) as part of the 2020 and 2021 PRRs for the site. The trend plots have been updated to include groundwater sample data collected in April 2022 and October 2022.

Trend plots have been developed for the eight monitoring wells that are sampled on a semiannual basis for the Semiannual Groundwater Discharge Reports (as described in Section 4.1). The following figures present the concentration trends for the eight monitoring wells:

- ***Figure 1 - BH87-28:*** Figure 1 shows that both the April 2022 and October 2022 samples at BH87-28 exhibited a decrease in total SSPL VOC concentration from the October 2021 sampling event, although the October 2022 sample did have an increase in total SSPL VOC concentration from the April 2022 sample. Since 2019, the total SSPL VOC concentrations at BH87-28 have varied between the April and October sampling events on a year-by-year basis, with the samples collected in October tending to have higher concentrations than samples collected in April or May. The most recent sampling event (October 2022) at BH87-28 had a total SSPL VOC concentration of 883.1 µg/L.
- ***Figure 2 - BH87-3A:*** Figure 2 shows that the total SSPL VOC concentrations at BH87-3A have varied between the April and October sampling events on a year-by-year basis, with the samples collected in October tending to have higher concentrations than samples collected in April or May. The most recent sampling event (October 2021) at BH87-3A had a total SSPL VOC concentration of 5,525.5 µg/L.
- ***Figure 3 - BH87-3B:*** Figure 3 shows that the total SSPL VOC concentrations at BH87-3B increased slightly during the April 2022 sampling event and then decreased slightly in the October 2022 sampling event. The results since October 2020 continue to be well below a spike from the October 2019 sampling event and have remained consistent with previous sample results aside from the October 2019 and May 2020 sampling events. The most recent sampling event (October 2022) at BH87-3B had a total SSPL VOC concentration of 1,468.6 µg/L.
- ***Figure 4 - MW01-9A:*** Figure 4 shows that the total SSPL VOC concentrations at MW01-9A have decreased steadily since a spike of 28,420 µg/L in April 2017. After decreases in total SSPL VOC concentrations for five consecutive sampling events from April 2019 to October 2021, there was a slight increase for the April 2022 sampling event and then another decrease for the October 2022 sampling event. The most recent sampling event (October 2022) at MW01-9A had a total SSPL VOC concentration of 946.6 µg/L.
- ***Figure 5 - MW-9:*** Figure 5 shows that the total SSPL VOC concentrations at MW-9 decreased during the April 2022 sampling event and increased slightly during the October 2022 sampling event. This was also observed during the April and October 2021 sampling events. The results have consistently remained below a spike of 14,170 µg/L in April 2019. The most recent sampling event (October 2022) at MW-9 had a total SSPL VOC concentration of 1,173.3 µg/L.

- ***Figure 6 - MW-12:*** Figure 6 shows that the total SSPL VOC concentrations at MW-12 in October 2022 had a slight increase after the April 2022 sampling event did not have any detections of SSPL VOCs. This is consistent with the 2020 and 2021 sampling events. The sample results have consistently remained below a spike of 508 µg/L in October 2014. The most recent sampling event (October 2022) at MW-12 had a total SSPL VOC concentration of 96.4 µg/L.
- ***Figure 7 - MW-13:*** Figure 7 shows that the total SSPL VOC concentrations at MW-13 have significantly decreased after a spike in total SSPL VOC concentrations in October 2021. The total SSPL VOC concentrations in both the April and October 2022 sampling events were consistent with the concentrations observed in the May 2020 through April 2021 sampling events. The most recent sampling event (October 2022) at MW-13 had a total SSPL VOC concentration of 114.3 µg/L.
- ***Figure 8 - MW88-13A:*** Figure 8 shows that the total SSPL VOC concentrations at MW88-13A have slightly decreased in October 2022 after slight increases during the previous two sampling events. The results have consistently remained below a spike of 34,056 µg/L in April 2015. The most recent sampling event (October 2022) at MW88-13A had a total SSPL VOC concentration of 8,174 µg/L.

4.1.2 Loading to the Sanitary Sewer System

As discussed in Section 4.1, semiannual discharge reports were submitted to the NFWB in May and November 2022. The discharge reports are included in Attachment C. Table 4 of the November 2022 discharge report lists the total chemical flux from all the A-Zone and B-Zone wells along Royal Avenue and 47th Street in order to determine the chemical loading (with regard to VOCs) to the tunnel sewer system. Based on the calculated loadings from the Royal Avenue West Side Mass Flux (A-Zone), the Royal Avenue East Side Mass Flux (A-Zone), the 47th Street Mass Flux (A-Zone), and the 47th Street Mass Flux (B-Zone), the total chemical loading (VOCs) to the tunnel sewer system for the November 2022 reporting period was 0.0281 pounds/day. Table 4 of the May 2022 discharge report lists a total chemical flux of 0.0361 pounds/day from all the A-Zone and B-Zone wells along Royal Avenue and 47th Street. The following table provides the average daily flow and total daily chemical loading (VOCs) to the tunnel sewer system from the A-Zone and B-Zone wells going back to 2014.

Reporting Period	Calculated Daily Flow (gal/day)	Total Chemical Loading (VOCs) from A-Zone and B-Zone Wells (pounds/day)
November 2022	1,503	0.0281
May 2022	1,912	0.0361
November 2021	1,994	0.0450
May 2021	1,415	0.0191
November 2020	1,591	0.0396
June 2020	2,419	0.0731
November 2019	2,330	0.1111
May 2019	2,131	0.0847
November 2018	1,882	0.0758
May 2018	2,414	0.0948
November 2017	2,019	0.1142
May 2017	2,435	0.1874
November 2016	1,809	0.0741
May 2016	3,457	0.2798
November 2015	2,097	0.1273
May 2015	2,395	0.1396
November 2014	3,220	0.0902
May 2014	3,077	0.1463

4.2 Annual Groundwater Sampling

Annual sampling of three C-Zone wells (MW1-C-08, MW2-C-08, and MW3-C-08) was conducted on October 5, 2022. The C-Zone wells were sampled in order to assess the bedrock groundwater quality over time. The wells were sampled for VOCs in accordance with EPA Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures. Table 1 presents the 2022 analytical results for the groundwater samples from the three C-Zone wells.

The C-Zone wells had previously been sampled in December 2008 and March-April 2009, as described in the Remedial Pre-Investigation Design Report (CRA, September 2010), as well as in October 2014-2021. Table 2 shows the 2022 analytical results for the three C-Zone wells as compared to the results from the 2008, 2009, and 2014-2021 samples, as well as the New York State Technical and Operational Guidance Series (NYS TOGs) guidance values and standards. A discussion of the sample results for the three wells is presented below.

- ***MW1-C-08*** - As seen in Table 2, the 2022 sample from MW1-C-08 had no detectable VOC results. This represents a reduction of total VOC results from the previous year (2021).
- ***MW2-C-08*** - The 2022 sample results from MW2-C-08 exceeded the NYS TOGS standards for 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-chlorotouene, and chlorobenzene. The total VOC results in the 2022 sample at MW2-C-08 were 280.9 µg/L, which is a decrease from the 2021 total VOC results at MW2-C-08 (304.9 µg/L).
- ***MW3-C-08*** - The 2022 sample results for MW3-C-08 exceeded the NYS TOGs standards for 1,2-dichlorobenzene,1,3-dichlorobenzene 1,4-dichlorobenzene, 2-chlorotoluene, and chlorobenzene. The total VOC results in the 2022 sample at MW3-C-08 were 91.19 µg/L, which is a decrease from the 2021 total VOC results at MW3-C-08 (165.5 µg/L).

The laboratory analytical results for the annual C-Zone groundwater sampling are presented in Attachment D.

The next annual sampling event, as well as the annual inspection, will occur in October 2023, followed by the preparation and submission of the next PRR.

4.2.1 Total Concentration Trends - Annual Groundwater Sampling

GHD compared the 2022 total VOC concentrations from the three C-Zone wells (MW1-C-08, MW2-C-08, and MW3-C-08) to the historical total VOC concentrations at those wells. Figure 9 shows the total VOC concentration trends at MW1-C-08 since measurements began in December 2008. Figure 10 shows the total VOC concentration trends at MW2-C-08 since 2008, and Figure 11 shows the same for MW3-C-08.

Figure 9 shows that total VOC concentrations at MW1-C-08 have remained below 6 µg/L since the 2013/2014 source area soil remediation activities were completed, with no detectable VOC concentrations 2022, which was a decrease from the 2021 sample at MW1-C-08. Figure 10 shows that total VOC concentrations at MW2-C-08 have decreased from the previous year, with a total VOC concentration at MW2-C-08 of 280.9 µg/L in 2022. Figure 11 shows that total VOC concentrations at MW3-C-08 have also decreased from the previous year (continuing a downward trend after a spike in VOC concentrations in 2018), with a total VOC concentration at MW3-C-08 of 91.19 µg/L in 2022.

4.3 Vertical Gradients

Groundwater elevations were collected from wells in the C-Zone (MW1-C-08, MW2-C-08, and MW3-C-08) during the October 2022 semiannual and annual groundwater sampling activities. The groundwater elevations were compared to the groundwater contours in the B-Zone at the same locations of the C-Zone wells that were generated using groundwater elevations from B-Zone wells during the October 2022 sampling activities. The nearest groundwater contour in the B-Zone was used to compare the groundwater elevation at each C-Zone well.

The following table shows the groundwater elevations, which are measured in feet above mean sea level (ft. AMSL), in the B-Zone and C-Zone at the locations of MW1-C-08, MW2-C-08, and MW3-C-08 in October 2022.

Zone	MW-1	MW-2	MW-3
B	545 ft. AMSL	554 ft. AMSL	554 ft. AMSL
C	556.17 ft. AMSL	556.07 ft. AMSL	557.09 ft. AMSL

The upward gradient between the C-Zone and B-Zone was confirmed by the groundwater elevations collected from the C-Zone wells and the B-Zone groundwater contours in October 2022.

4.4 PFC and 1,4-Dioxane Sampling

The annual groundwater sampling program has included sampling and analysis for perfluorinated chemicals (PFCs) and 1,4-dioxane since 2018, as part of a statewide evaluation of PFCs and their occurrence in water supplies. A total of five groundwater samples have been collected and analyzed for PFCs and 1,4-dioxane since 2018. The samples have been analyzed for per- and polyfluoroalkyl substances (PFAS), with the laboratory analyzing for 21 individual PFCs, including perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) via EPA Method 537. From 2018 to 2019, the following 5 wells were sampled as part of the PFC and 1,4-dioxane evaluation: MW-12, MW88-13A, MW01-9A, MW-9, and MW-13. Based on discussions with the NYSDEC in August 2020, MW-12 (located in the southeast corner of the Site) was replaced by BH87-28 (also located in the southeast corner of the Site) for the PFC and 1,4-dioxane sampling.

The annual sampling for PFCs and 1,4-dioxane was continued in 2022, and the sampling was conducted as part of the October 2022 sampling event. The locations of the five wells are presented in Figure 12 (A-Zone) and Figure 13 (B-Zone). The results of the October 2022 PFC and 1,4-dioxane sampling are included in Table 3. The results of the October 2022 samples are presented along with the results of the January and October 2018, October 2019, October 2020, and October 2021 samples in Table 4 in order to compare the results of the sampling events over the past 5 years. The laboratory analytical results for the PFC and 1,4-dioxane sampling are presented in Attachment D.

The following table shows the total PFC detections at each well for both the two 2018 sampling events, plus the October 2019 - 2022 sampling events. Total PFC detections continued declining at three of the five wells sampled in 2022: MW01-9A, MW-9, and MW-13. All three of those wells had total PFC detections below 1,000 ng/L. MW01-9A continued its three-year downward trend of total PFC detections, with a total PFC detection of 861.6 ng/L after a spike of 16,050 ng/L in 2019. Wells BH87-28 and MW88-13A both exhibited increases of total PFC detections as compared to the 2021 sample results. All total PFC results were well below the levels detected in the initial sampling event in January 2018.

Monitoring Well	Total PFC Detections (ng/L) January 2018	Total PFC Detections (ng/L) September 2018	Total PFC Detections (ng/L) 2019	Total PFC Detections (ng/L) 2020	Total PFC Detections (ng/L) 2021	Total PFC Detections (ng/L) 2022
MW01-9A	10,722.04	5,756.57	16,050	4,391.70	1,489	861.6
MW-9	9,456.61	2,958.99	3,939.40	4,225.6	896.90	380.93
MW-12	1,600.46	1,499.54	881.61	NS	NS	NS
BH87-28	NS	NS	NS	706.95	1,207.80	1530.9
MW-13	5,212.5	1,062.43	1,500.47	1,544.18	1,064.08	853.59
MW88-13A	4,897.58	4,109.48	3,146.40	3,044.39	1,785.44	3253.00
Notes:						
NS - Not sampled						

In evaluating the October 2022 sampling event, the results of two individual PFCs were evaluated: PFOA and PFOS. The October 2022 PFOA and PFOS results were compared to the January and September 2018 results, as well as the October 2019 - 2021 sampling events. New York State has recently announced maximum contaminant levels (MCLs) for drinking water of 10 part per trillion (ppt) for PFOA and 10 ppt for PFOS. The United States Environmental Protection Agency (USEPA) currently has interim screening levels for groundwater at contaminated sites of 40 ppt for both PFOA and PFOS. The PFOA and PFOS results from the January and September 2018, as well as the October 2019 - 2022 sampling events were compared to the new MCLs for drinking water, despite the fact that the Site groundwater is not used for drinking water.

4.4.1 PFOA Analysis

For the PFOA analysis, the October 2022 results were lower than the October 2021 results at two of the five wells sampled: MW01-9A and MW-9. BH87-28, MW-13 and MW88-13A had slight increases in PFOA results during the 2022 sampling.

The October 2022 PFOA results at each of the five wells were above the New York State MCL's for drinking water. However, the October 2022 PFOA results at MW-9 were below the USEPA interim screening level for groundwater at contaminated sites of 40 ppt. The October 2022 PFOA results at each of the five wells were lower than the initial sampling event in January 2018. The following table shows the PFOA detections at each well for the January and September 2018, October 2019, October 2020, October 2021, and October 2022 sampling events.

Monitoring Well	NYS MCLs for PFOA (ng/L)	PFOA Results (ng/L) January 2018	PFOA Results (ng/L) September 2018	PFOA Results (ng/L) October 2019	PFOA Results (ng/L) October 2020	PFOA Results (ng/L) October 2021	PFOA Results (ng/L) October 2022
MW01-9A	10	460	230	700	190	73	55
MW-9	10	350	95	140	160	38	24
MW-12	10	70	44	37	NS	NS	NS
BH87-28	10	NS	NS	NS	19	36	44
MW-13	10	430	21	37	69	48	52
MW88-13A	10	110	100	95	73	62	91
Notes:							
NS - Not sampled							

4.4.2 PFOS Analysis

For the PFOS analysis, the October 2022 results were lower than the October 2021 results at three of the five wells that were sampled: MW01-9A, MW-9, and BH87-28. MW-13 and MW88-13A had slight increases in PFOS results. The October 2022 PFOS results were below the New York State MCLs for drinking water at MW01-9A, MW-9 and BH87-28. PFOS was not detected at all at MW-9 during the October 2022 sampling. However, the October 2022 PFOS results were above the MCLs at MW-13 and MW88-13A. The October 2022 PFOS results were below the USEPA interim screening level for groundwater at contaminated sites of 40 ppt at each of the five wells that were sampled. The October 2022 PFOS results at each of the five wells were also lower than the initial sampling event in January 2018.

The following table shows the PFOS detections at each well for the January and September 2018, October 2019, October 2020, October 2021, and October 2022 sampling events.

Monitoring Well	NYS MCLs for PFOS (ng/L)	PFOS Results (ng/L) January 2018	PFOS Results (ng/L) September 2018	PFOS Results (ng/L) October 2019	PFOS Results (ng/L) October 2020	PFOS Results (ng/L) October 2021	PFOS Results (ng/L) October 2022
MW01-9A	10	26	11	19	12	4.2	2.5
MW-9	10	23	7	7.9	6.7	4.6	ND
MW-12	10	26	15	14	NS	NS	NS
BH87-28	10	NS	NS	NS	8.4	7.1	4.3
MW-13	10	49	4.9	5.6	35	33	34
MW88-13A	10	37	39	37	33	18	24
Notes:							
NS - Not sampled							
ND – Not detected							

4.4.3 1,4-dioxane Analysis

1,4-dioxane has been analyzed at various site wells on an annual basis since 2018. The following table shows the 1,4-dioxane detections at each well for the September 2018, October 2019, October 2020, October 2021, and October 2022 sampling events. New York State has recently announced MCLs for drinking water of 1 ppb for 1,4-dioxane.

The October 2022 sampling results for 1,4-dioxane were above the NYS MCL of 1 µg/L at all five wells. However, the October 2022 results for 1,4-dioxane exhibited a reduction from the October 2021 results at two of the five wells (MW01-9A and MW-9), with slight increases observed at BH87-28, MW-13, and MW88-13A.

Monitoring Well	NYS MCLs for 1,4-dioxane (µg/L)	1,4-dioxane Results (µg/L) September 2018	1,4-dioxane Results (µg/L) October 2019	1,4-dioxane Results (µg/L) October 2020	1,4-dioxane Results (µg/L) October 2021	1,4-dioxane Results (µg/L) October 2021
MW01-9A	1	69	130	20	13	8.6
MW-9	1	36	54	39	15	9.9
MW-12	1	1.9	1.1	NS	NS	NS
BH87-28	1	NS	NS	0.56	2.7	4.6
MW-13	1	1.2	1.2	1	ND	1.2
MW88-13A	1	23	19	20	10	15
Notes:						
NS – Not Sampled						
ND – Not detected						

4.5 Additional Groundwater Sampling

In the NYSDEC's Acceptance letter for the 2019 PRR (dated February 11, 2020), the NYSDEC requested that one round of comprehensive sampling be completed for the wells along 47th Street that are not currently monitored under the SMP. Based on an email discussion with the NYSDEC dated September 22, 2020, it was decided that monitoring wells MW88-8A, M88-8B, and MW88-12A would be added to the October 2020 sampling event. The locations of these three wells are presented in Figures 12 (A-Zone) and

13 (B-Zone). While these wells are not located along the eastern perimeter of the Site, they are located in the eastern portion of the Site. The three wells were analyzed for all contaminants of concern listed on the revised Table 4.2 of the SMP (SSPL VOCs, SSPL Metals, and total phenol), as well as chloropicrin. The results of the October 2020 sampling were presented in the 2020 PRR, which was submitted to the NYSDEC on December 18, 2020. The three additional wells were also sampled as part of the 2021 sampling program, and the results were presented in the 2021 PRR.

In the NYSDEC acceptance letter of the 2021 PRR (dated February 3, 2022), the NYSDEC requested that MW88-8A, M88-8B, and MW88-12A require further monitoring and should be incorporated into the annual site monitoring plan. As a result, those three wells were sampled again in October 2022 and analyzed for SSPL VOCs, SSPL Metals, total phenol, and chloropicrin

Table 5 presents the results of the October 2022 additional sampling. Table 6 presents the results of the October 2022 additional sampling along with the results of the October 2020 and October 2021 additional sampling for comparison. MW88-8A had a sharp decrease in total SSPL VOC detections, with a 2022 result of 141,201 µg/L after a result of 279,160 µg/L in 2021 and a result of 368,490 µg/L in 2020.

The B-Zone well at the same location (MW88-8B) had a total SSPL VOC result of 1,701.9 µg/L in 2022 (as compared to 5,479.8 µg/L in 2021 and 6,154 µg/L in 2020. MW88-12A had a slight increase in total SSPL VOC detections in 2022 (825 µg/L) as compared to the 2021 sampling (679.3 µg/L), but was still significantly lower than the 2020 sampling (34,958 µg/L).

The sample collected from the nearest hydraulically downgradient well in the A-Zone from MW88-8A and MW88-12A was collected from BH87-28 as part of the October 2022 semiannual sampling. For the October 2022 sampling, BH87-28 had a total SSPL VOC result of 883.1 µg/L.

Chloropicrin was not detected in any of the three additional wells that were sampled as part of the October 2022 sampling event. Chloropicrin has not been detected in any of the three additional wells since it was added to the sampling program in 2020.

The laboratory analytical results for the additional requested sampling, as well as the PFC and 1,4-dioxane sampling and the annual C-Zone groundwater sampling are presented in Attachment D.

5. Overall Conclusions and Recommendations

All of the required work was completed and is reported herein. The remedy has effectively isolated and secured the residual material, and there is no risk to human health or the environment. It is noted that there are a few chemicals present in the C-Zone groundwater that exceed the NYS TOGS standards. However, there is an upward gradient from the C-Zone into the B-Zone that should protect the C-Zone from impact associated with any of the residual materials left in the Site soils. It is recommended that the annual groundwater monitoring of the C-Zone wells continue for an additional year as described in the SMP in order to track the current condition. An evaluation of the continued need for sampling of the C-Zone wells will be made after the 2023 sampling event. The sampling of the three additional wells (MW88-8A, MW88-8B, and MW88-12A) indicated elevated SSPL VOC detections (with a decrease in two of the wells in 2022); however, downgradient wells did not indicate similar SSPL VOC impacts. Semiannual groundwater monitoring and annual inspections will also continue as described in the SMP.

Because chloropicrin has not been detected in any site wells since sampling for the parameter started in 2020, it is recommended that chloropicrin be removed from the annual Site sampling program.

As required, a completed copy of the Site Management PRR Notice - Institutional and Engineering Controls Certificate Form is included as Attachment E.

Should there be any questions, please do not hesitate to contact myself at 716-205-1975 or Jennifer Booker of Greenpac Mill at **jenniferbooker@greenpacmill.com**.

Regards,

Shaun McEvoy
Engineer
+1 716 205-1975
shaun.mcevoy@ghd.com

Attachments

Copy to: Glenn May, NYSDEC
Derek Claus, Greenpac Mill
Jennifer Booker, Greenpac Mill
Douglas Horsmon, Greenpac Mill
Craig Eddy, Greenpac Mill
Richard Snyder, GHD

Figures

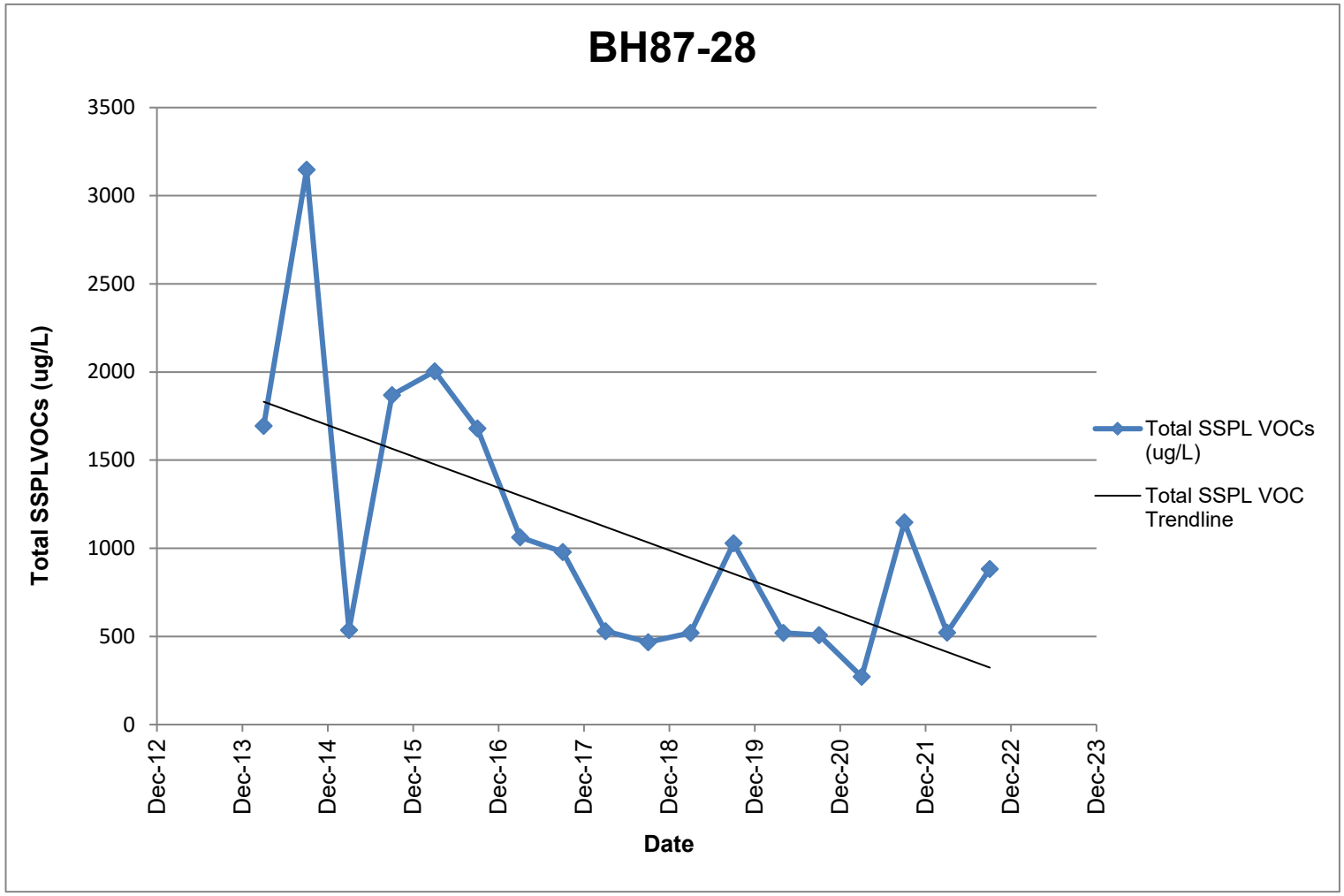

figure 1
Total SSPL VOC Concentration Trend, BH87-28 (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

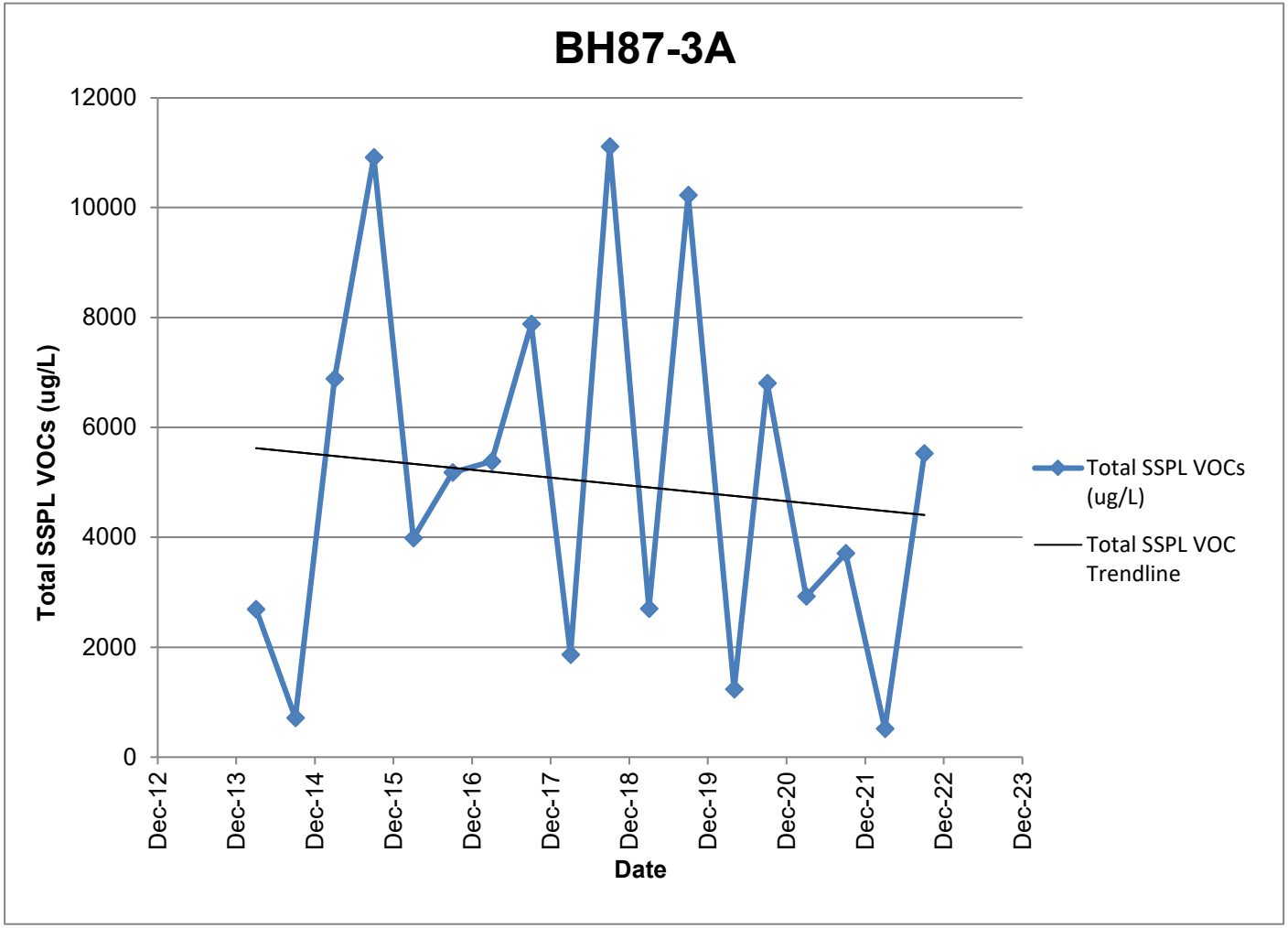

figure 2
Total SSPL VOC Concentration Trend, BH87-3A (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

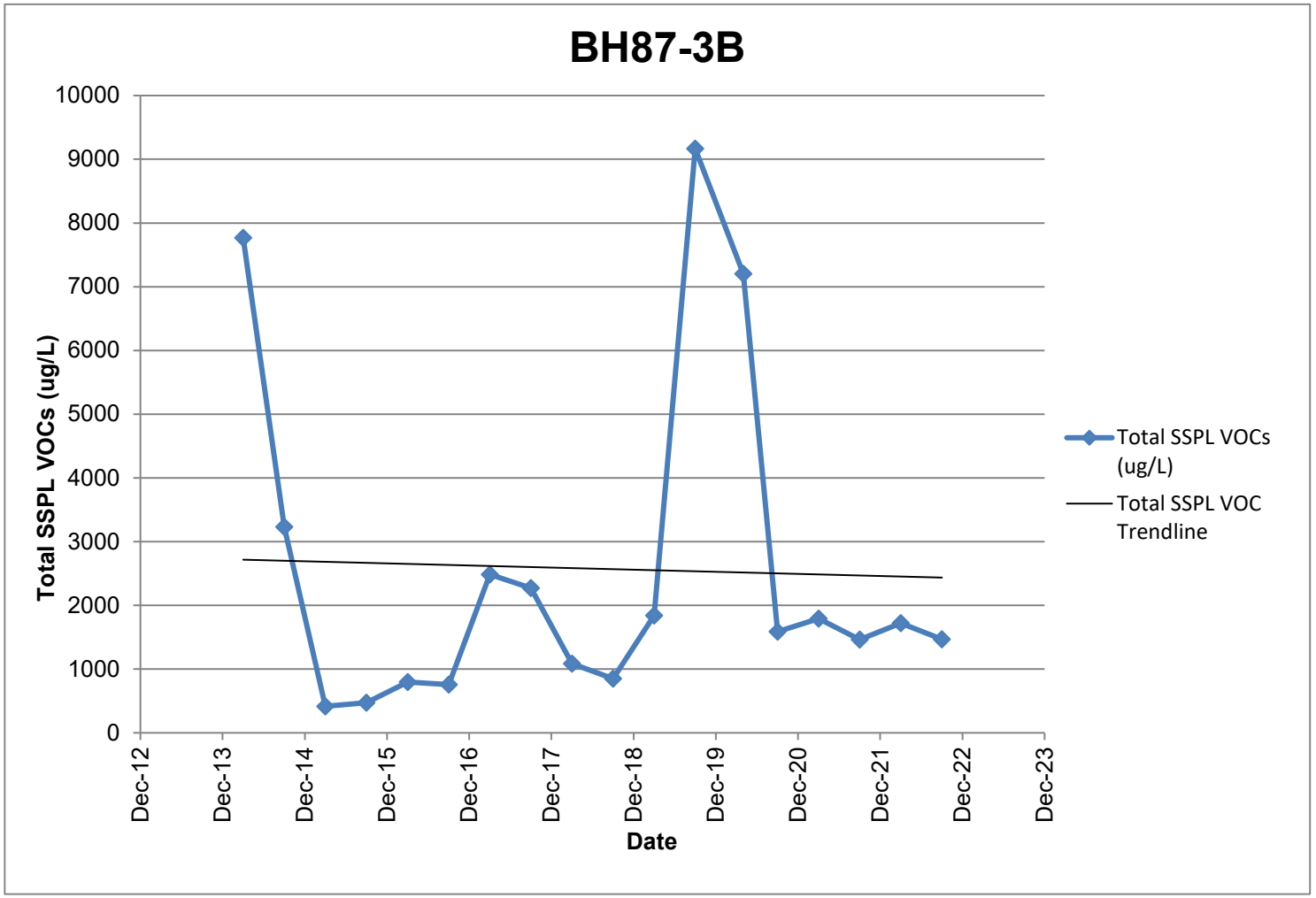

figure 3
Total SSPL VOC Concentration Trend, BH87-3B (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

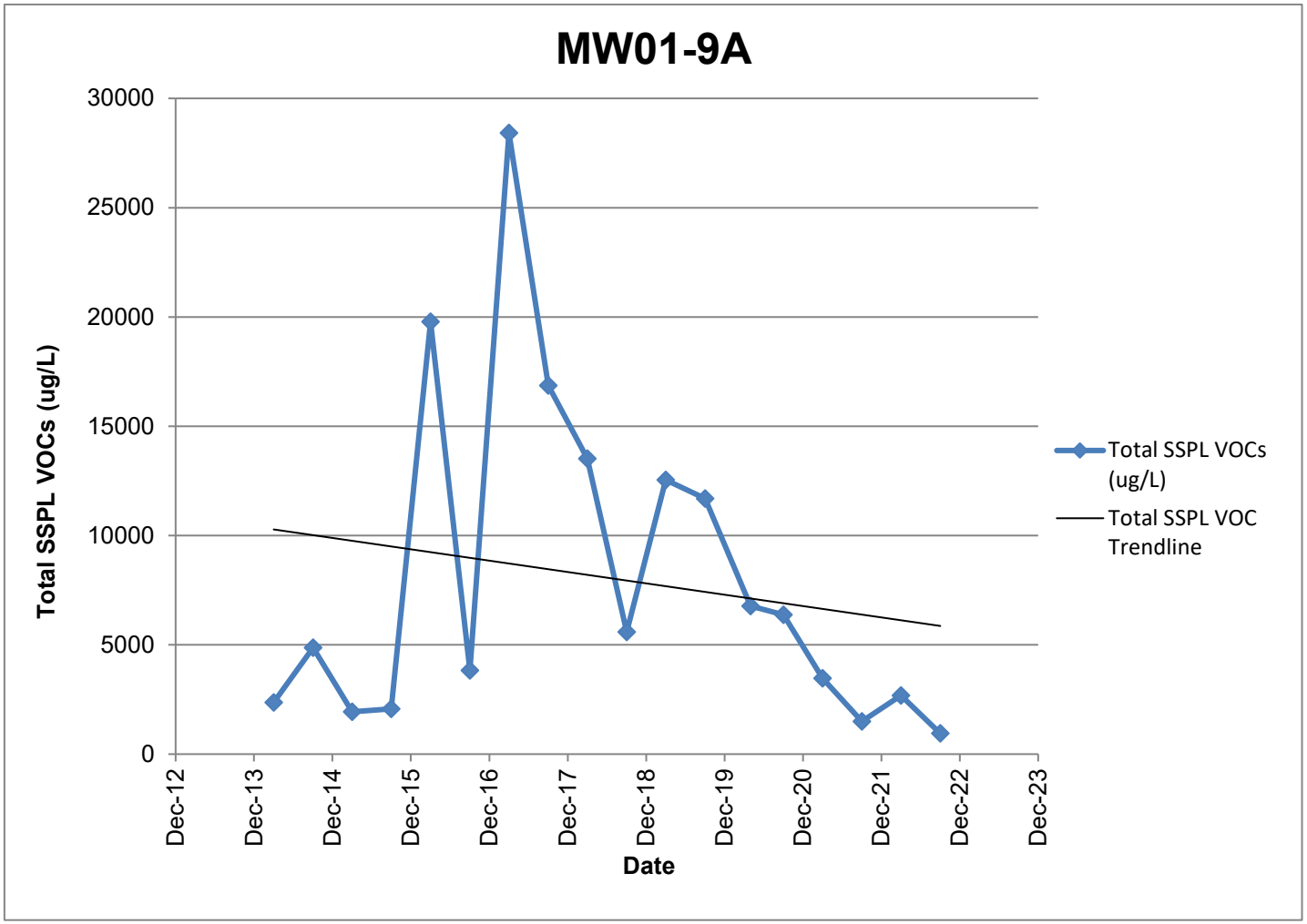

figure 4
Total SSPL VOC Concentration Trend, MW01-9A (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

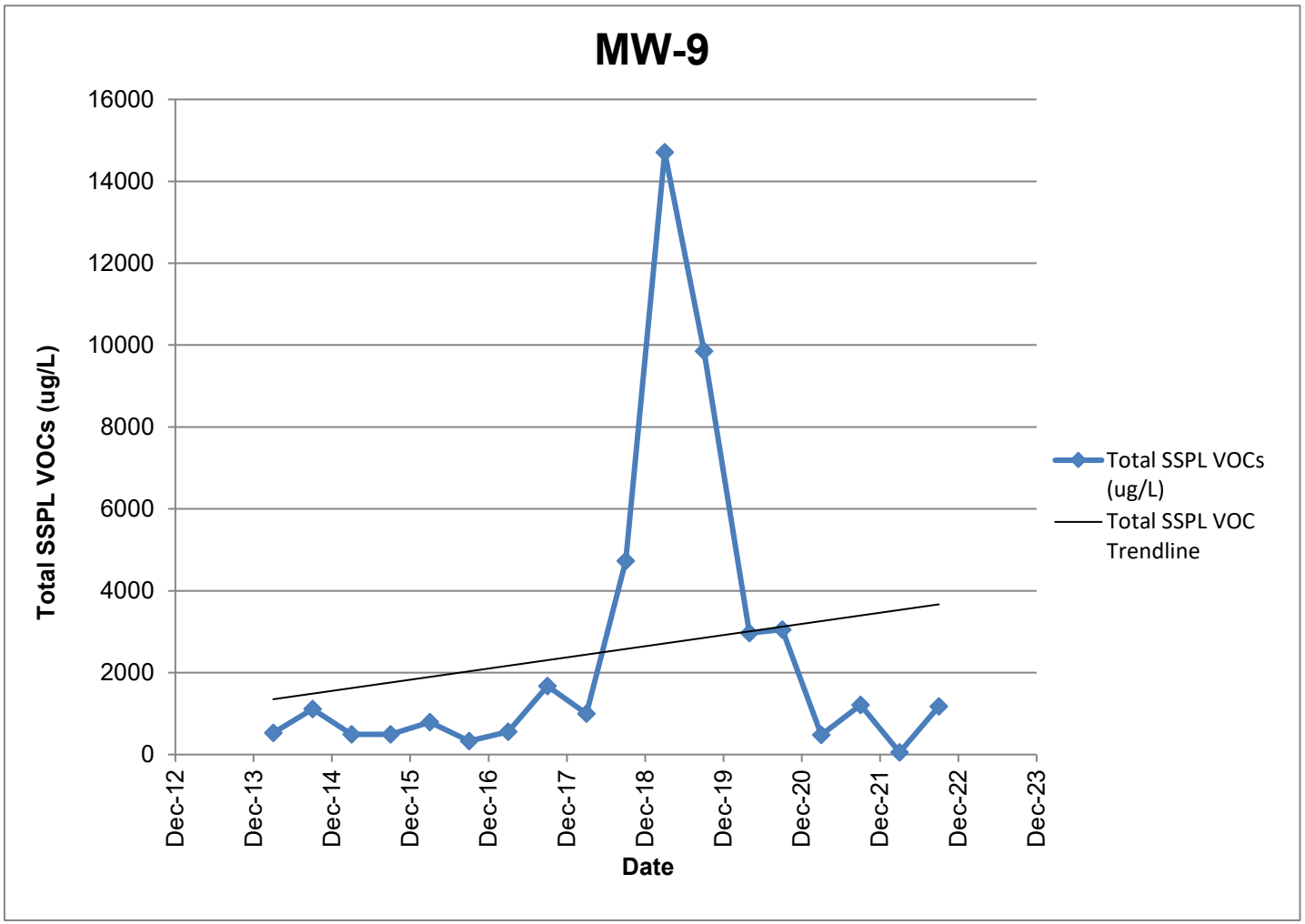

figure 5
Total SSPL VOC Concentration Trend, MW-9 (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

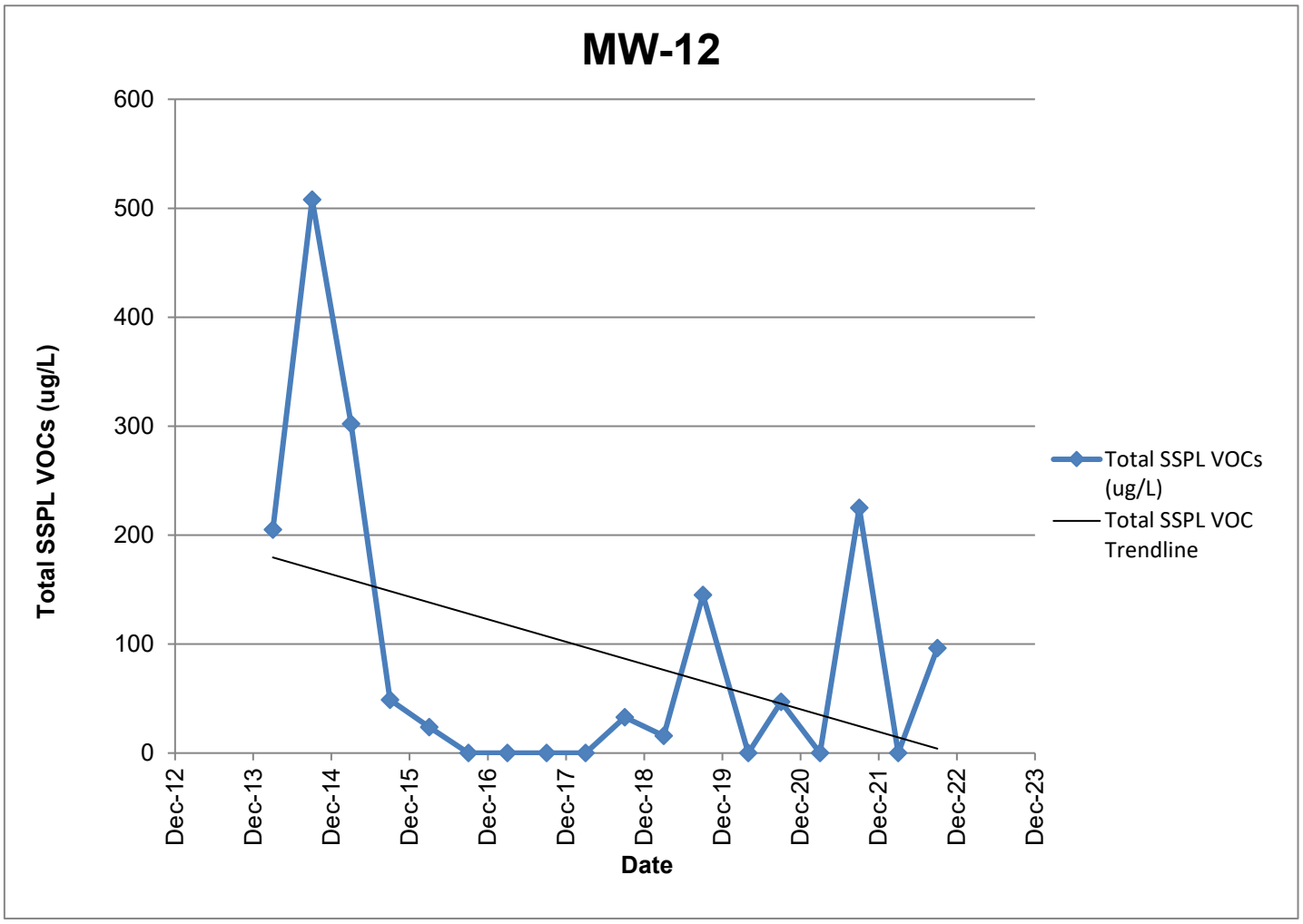

figure 6
Total SSPL VOC Concentration Trend, MW-12 (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

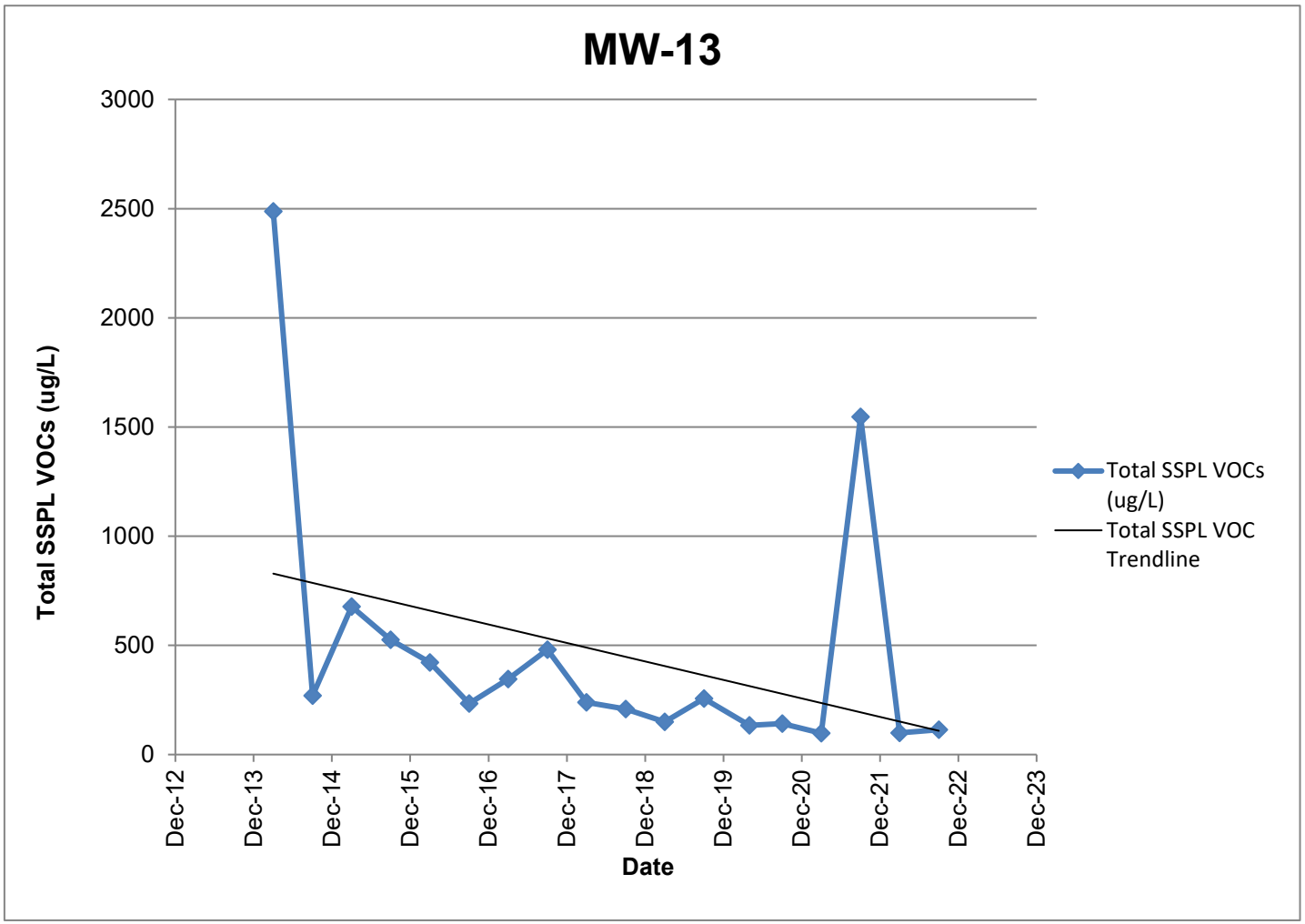

figure 7
Total SSPL VOC Concentration Trend, MW-13 (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

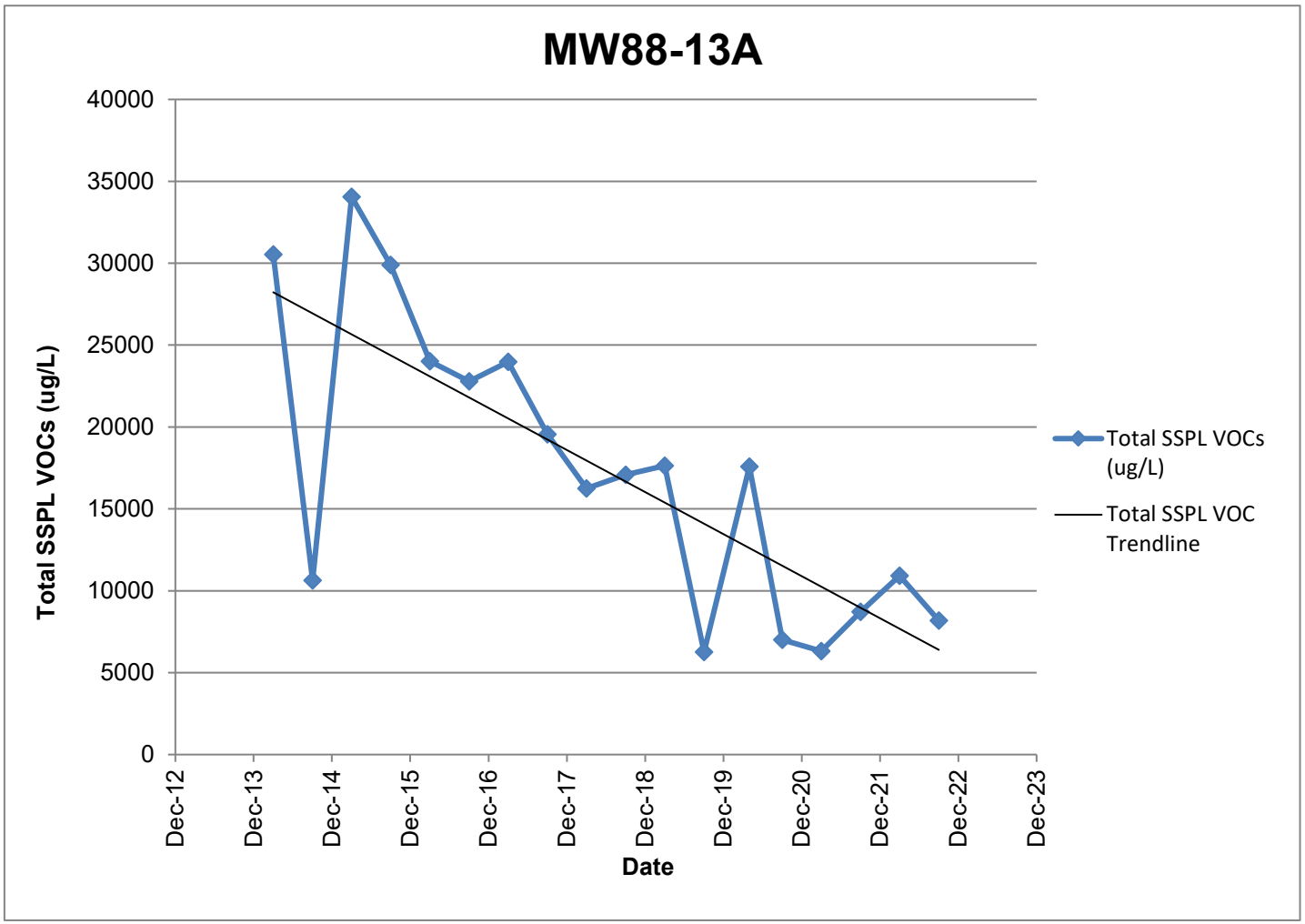

figure 8
Total SSPL VOC Concentration Trend, MW88-13A (2014 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

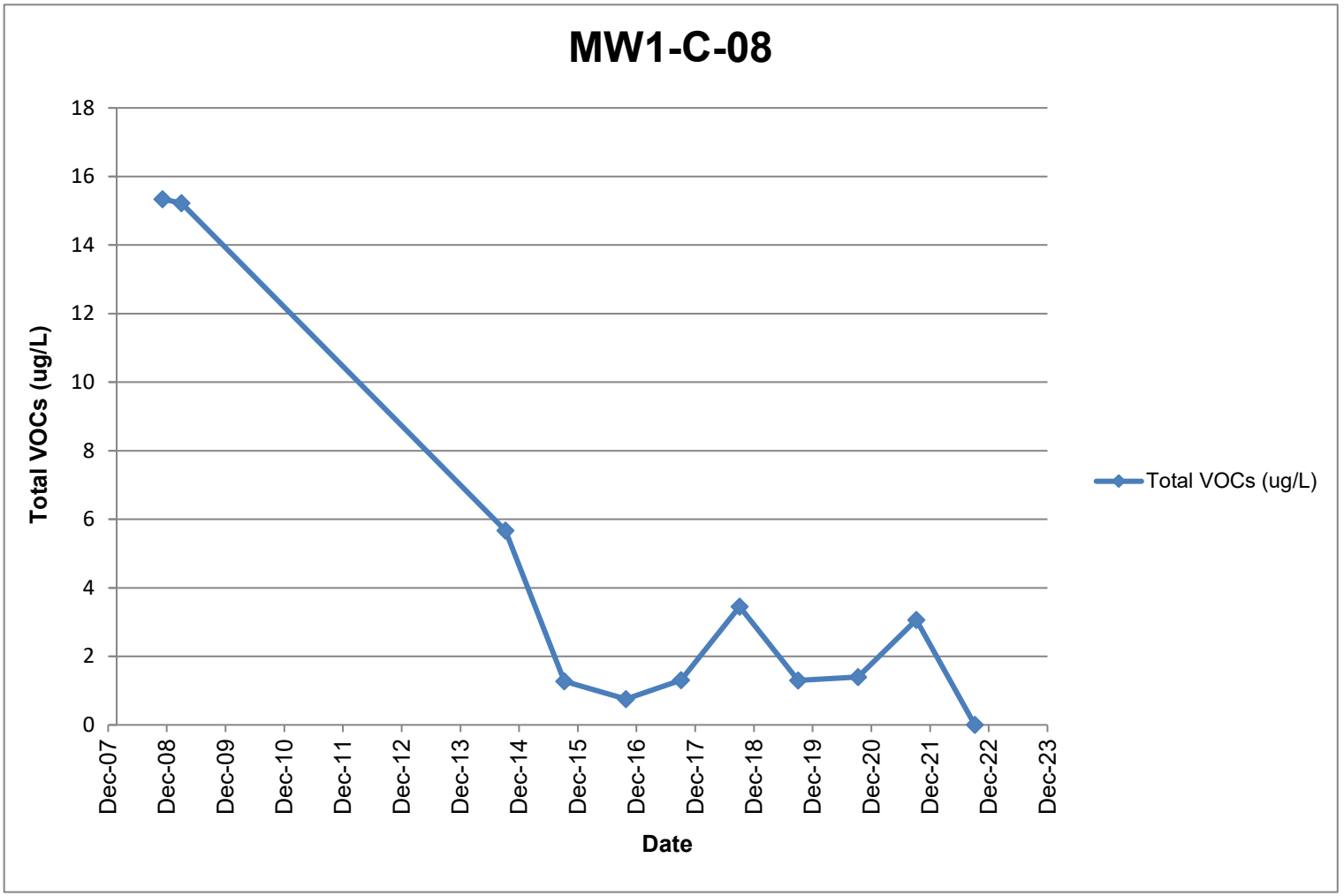

figure 9
Total VOC Concentration Trend, MW1-C-08 (2008 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

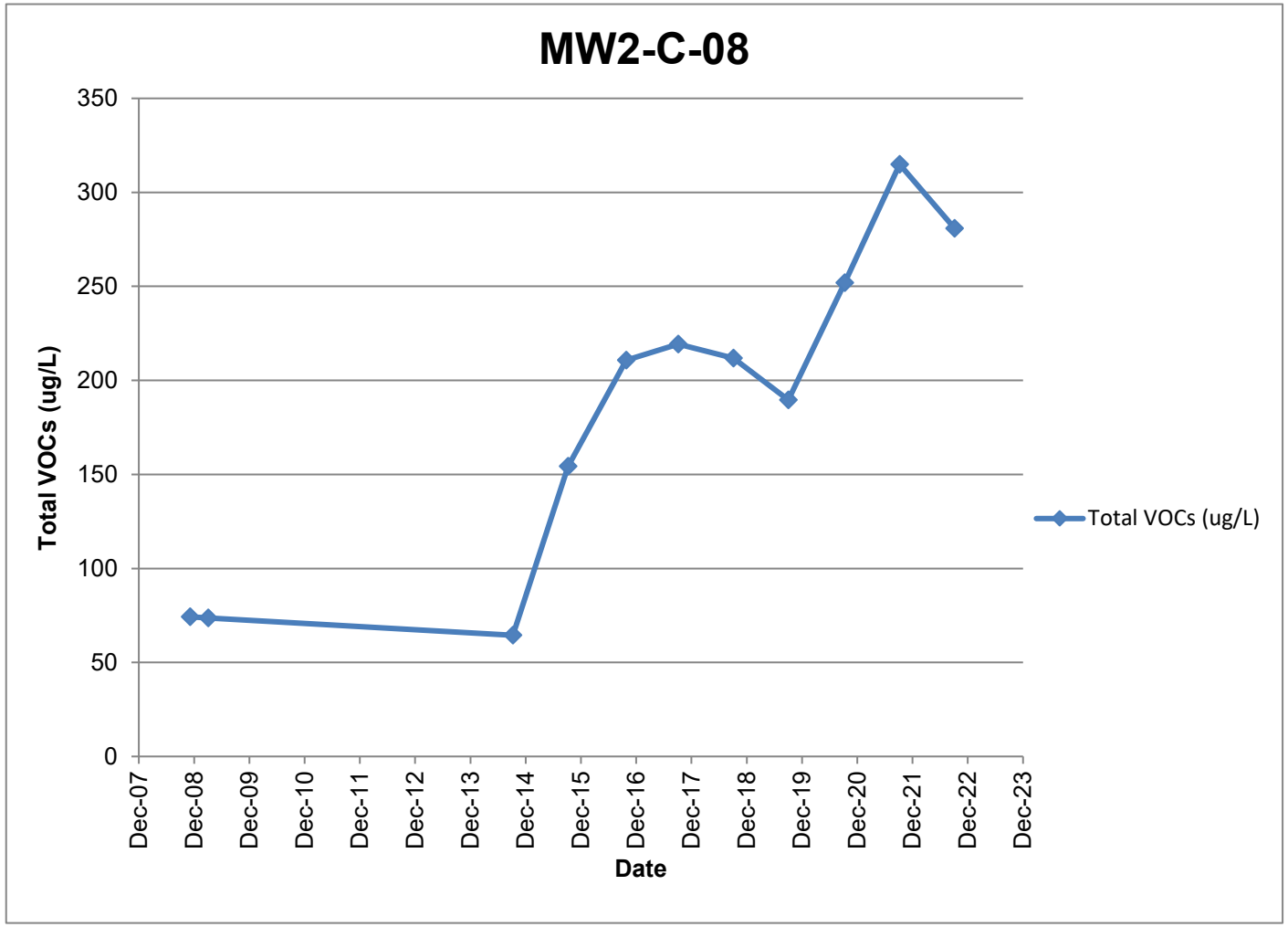

figure 10
Total VOC Concentration Trend, MW2-C-08 (2008 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

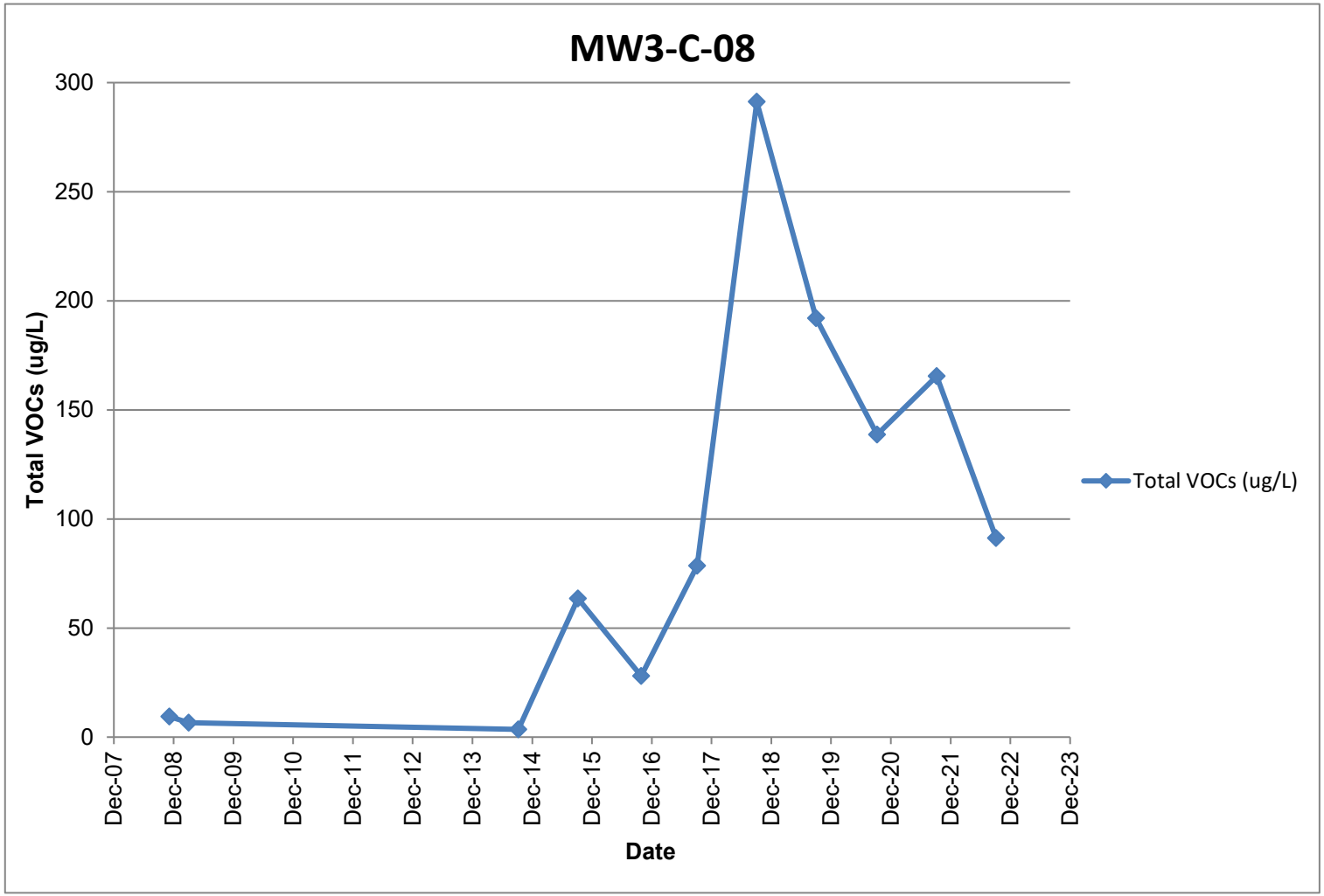

figure 11
Total VOC Concentration Trend, MW3-C-08 (2008 - 2022)
Cascades Containerboard Packaging Site
2022 Periodic Review Report
GHD

REPUTED OWNER
NIAGARA JUNCTION RAILWAY COMPANY

REPUTED OWNER
5335 RIVER ROAD, INC.
L–3118, P–293

REPUTED OWNER
FRANK'S VACUUM TRUCK SERVICE
L–2362, P–255

REPUTED OWNER
ELKEM METALS COMPANY

MW88-1A
MW90-1A
MW-14
MW88-4A
MW-17
MW88-14A
MW88-8A
MW88-10A
MW88-12A
MW-15
BH87-2A
MW88-7A
MW88-2A
MW88-3A
BH87-5C
MW-2
MW88-9A
MW01-9A
MW88-6A
BH87-3A
MW88-13A
BH87-28

47TH STREET TUNNEL

CONCRETE PAD
DEMOLITION DEBRIS
PAVED
GRAVEL
CHAIN LINK FENCE
BLOCK BLDG.
47th STREET
ROYAL AVENUE
5' WIDE SIDEWALK
SAND STONE CURB
7' x 6' FALLS ST. SEWER TUNNEL (UNLINED)
SOUTHSIDE INTERCEPTOR SEWER TUNNEL (72-INCH DIAMETER)
RUINS
GATE
CONC. APRON
HYD.

LEGEND

- MW88-12A — A-ZONE MONITORING WELL LOCATION
- MW88-2A — WELL DECOMMISSIONED DURING 2013 SOIL REMEDIATION
- 2022 PFC SAMPLING LOCATION
- 2022 ADDITIONAL SAMPLING LOCATION

0 50 100 ft
1" = 100 ft

N

GHD

CASCADES CONTAINERBOARD PACKAGING
NIAGARA FALLS DIVISION
NIAGARA FALLS, NEW YORK

2022 PFC AND ADDITIONAL SAMPLING LOCATIONS - ZONE A

Project No. **12595539**
Date **December 2022**

FIGURE 12

Filename: N:\US\Niagara Falls\Projects\564\12595539\Digital_Design\ACAD\Figures\LTR-Vaccaro001\12595539-GHD-00-00-LTR-EN-D101_WA-Vaccaro001.dwg
Plot Date: 07 December 2022 12:39 PM

REPUTED OWNER
NIAGARA JUNCTION RAILWAY COMPANY

REPUTED OWNER
FRANK'S VACUUM TRUCK SERVICE
L-2362, P-255

REPUTED OWNER
5335 RIVER ROAD, INC.
L-3118, P-293

REPUTED OWNER
ELKEM METALS COMPANY

ROYAL AVENUE

47th STREET

47TH STREET TUNNEL

MW88-1B
MW90-1B
MW88-4B
MW-13
MW88-14B
MW88-8B
MW88-10B
MW88-12B
BH87-2B
MW88-2B
MW88-7BR
MW88-3B
MW88-9B
MW88-5B
MW88-6B
MW-9
BH87-3B
MW-11
MW-12

CHAIN LINK FENCE
CONCRETE PAD
DEMOLITION DEBRIS
PAVED
GRAVEL
BLOCK BLDG.
FENCE
RUINS
5' WIDE SIDEWALK
SAND STONE CURB
7' x 6' FALLS ST. SEWER TUNNEL (UNLINED)
SOUTHSIDE INTERCEPTOR SEWER TUNNEL (72-INCH DIAMETER)
DIVERSION/ REGULATOR WEIR
GATE
CONC. APRON
HYD.
490.42'

SAN MH 10 RM 570.36
RCVR 11 RM 569.65
ELEC MH 14 RM 570.36
MH 12 RM 570.13
RCVR 13 RM 569.78
ELEC MH 15 RM 570.22
SAN MH 5 RM 571.00
MH 7 RM 570.53
MH 6 RM 570.84
SAN MH 8 RM 571.36
SAN MH 9 RM 571.52
ELEC MH 16 RM 570.71
ELEC MH 17 RM 570.37
ELEC MH 18 RM 570.14
RCVR 19 RM 569.45
SAN MH 4 RM 570.01
RCVR 3 RM 569.66
ELEC MH 2 RM 570.51 (TWO RIM SHOT ON COVER)
SAN MH 20 RM 570.56
SAN MH 21 RM 571.34
SAN MH 1 RM 570.66
MH 23 RM 570.01
ELEC MH 22 RM 570.08
ELEC MH 28 RM 570.88
SAN MH 29 RM 570.92
MH 31 RM 570.90
RCVR 33 RM 570.81
SAN MH 34 RM 571.32
MH 24 RM 571.31
MH 24 RM 571.06
ELEC. MH 26 RM 571.01
ELEC. MH 27 RM 571.01
RCVR 32 RM 570.88
SAN MH 30 RM 571.02

LEGEND

- MW88-12B A-ZONE MONITORING WELL LOCATION
- MW88-2B WELL DECOMMISSIONED DURING 2013 SOIL REMEDIATION
- 2022 PFC SAMPLING LOCATION
- 2022 ADDITIONAL SAMPLING LOCATION

0 50 100 ft
1" = 100 ft

N

GHD

CASCADES CONTAINERBOARD PACKAGING
NIAGARA FALLS DIVISION
NIAGARA FALLS, NEW YORK

2022 PFC AND ADDITIONAL SAMPLING LOCATIONS - ZONE B

Project No. 12595539
Date December 2022

FIGURE 13

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Plot Date: 07 December 2022 12:52 PM

Tables

Table 1

Analytical Results Summary - VOCs
C-Zone Groundwater Sampling
Cascades Containerboard Packaging Site
Niagara Falls, New York
October 2022

Location ID:		**MW1-C-08**	**MW2-C-08**	**MW3-C-08**
Sample Name:		**WG-12595539-100522-KM-014**	**WG-12595539-100522-KM-015**	**WG-12595539-100522-KM-010**
Sample Date:		**10/5/2022**	**10/5/2022**	**10/5/2022**
Parameters	**Unit**			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	5.0 U	20 U	5.0 U
1,1,2,2-Tetrachloroethane	µg/L	5.0 U	20 U	5.0 U
1,1,2-Trichloroethane	µg/L	5.0 U	20 U	5.0 U
1,1-Dichloroethane	µg/L	5.0 U	20 U	5.0 U
1,1-Dichloroethene	µg/L	5.0 U	20 U	5.0 U
1,2,4-Trichlorobenzene	µg/L	5.0 U	20 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	5.0 U	20 U	5.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	5.0 U	20 U	5.0 U
1,2-Dichlorobenzene	µg/L	5.0 U	5.7 J	8.7
1,2-Dichloroethane	µg/L	5.0 U	20 U	5.0 U
1,2-Dichloropropane	µg/L	5.0 U	20 U	5.0 U
1,3-Dichlorobenzene	µg/L	5.0 U	31	10
1,4-Dichlorobenzene	µg/L	5.0 U	60	48
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	25 U	100 U	25 U
2-Chlorotoluene	µg/L	5.0 U	33	5
2-Hexanone	µg/L	25 U	100 U	25 U
3-Chlorotoluene	µg/L	5.0 U	1.2 J	5.0 U
4-Chlorotoluene	µg/L	5.0 U	20 U	0.49 J
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	25 U	100 U	25 U
Acetone	µg/L	25 U	100 U	25 U
Benzene	µg/L	5.0 U	20 U	5.0 U
Bromodichloromethane	µg/L	5.0 U	20 U	5.0 U
Bromoform	µg/L	5.0 U	20 U	5.0 U
Bromomethane (Methyl bromide)	µg/L	5.0 U	20 U	5.0 U
Carbon disulfide	µg/L	5.0 U	20 U	5.0 U
Carbon tetrachloride	µg/L	5.0 U	20 U	5.0 U
Chlorobenzene	µg/L	5.0 U	150	19
Chloroethane	µg/L	5.0 U	20 U	5.0 U
Chloroform (Trichloromethane)	µg/L	5.0 U	20 U	5.0 U
Chloromethane (Methyl chloride)	µg/L	5.0 U	20 U	5.0 U
cis-1,2-Dichloroethene	µg/L	5.0 U	20 U	5.0 U
cis-1,3-Dichloropropene	µg/L	5.0 U	20 U	5.0 U
Dibromochloromethane	µg/L	5.0 U	20 U	5.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	5.0 U	20 U	5.0 U
Ethylbenzene	µg/L	5.0 U	20 U	5.0 U
Isopropyl benzene	µg/L	5.0 U	20 U	5.0 U
Methyl tert butyl ether (MTBE)	µg/L	5.0 U	20 U	5.0 U
Methylene chloride	µg/L	5.0 U	20 U	5.0 U
Styrene	µg/L	5.0 U	20 U	5.0 U
Tetrachloroethene	µg/L	5.0 U	20 U	5.0 U
Toluene	µg/L	5.0 U	20 U	5.0 U
trans-1,2-Dichloroethene	µg/L	5.0 U	20 U	5.0 U
trans-1,3-Dichloropropene	µg/L	5.0 U	20 U	5.0 U
Trichloroethene	µg/L	5.0 U	20 U	5.0 U
Trichlorofluoromethane (CFC-11)	µg/L	5.0 U	20 U	5.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	5.0 U	20 U	5.0 U
Vinyl chloride	µg/L	5.0 U	20 U	5.0 U
Xylenes (total)	µg/L	10 U	40 U	10 U

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit

Table 2

Summary of Deep Groundwater (C-Zone) Analytical VOC Results - 2022 and Historical
Cascades Containerboard Packaging Site
Niagara Falls, New York

Parameter	Units	New York State TOGs Guidance Value	New York State TOGs Standard	Location ID: MW1-C-08 Sample Name: GW-47392-120308-JJW-001 Sample Date: 12/03/2008	Location ID: MW1-C-08 Sample Name: GW-47392-033109-JJW-014 Sample Date: 03/31/2009	Location ID: MW1-C-08 Sample Name: GW-47392-033109-JJW-015 Sample Date: 03/31/2009 Duplicate	Location ID: MW1-C-08 Sample Name: WG-47392-100714-DJT-010 Sample Date: 10/07/2014	Location ID: MW1-C-08 Sample Name: WG-11109628-100815-SG-012 Sample Date: 10/08/2015	Location ID: MW1-C-08 Sample Name: WG-11109628-102516-SG-003 Sample Date: 10/25/2016	Location ID: MW1-C-08 Sample Name: WG-11109628-100417-SG-010 Sample Date: 10/04/2017	Location ID: MW1-C-08 Sample Name: WG-11109628-100318-SG-010 Sample Date: 10/03/2018	Location ID: MW1-C-08 Sample Name: WG-11109628-100119-SG-006 Sample Date: 10/01/2019
Volatile Organic Compounds (VOCs)												
1,1,1-Trichloroethane	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	µg/L	NC	1	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,1-Dichloroethane	µg/L	NC	5	1.0 U	1.0 U	1.0 U	0.77J	0.65 J	0.75 J	0.67 J	0.65 J	5.0 U
1,1-Dichloroethene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	NC	0.04	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	--	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	µg/L	NC	0.0006	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	--	5.0 U
1,2-Dichlorobenzene	µg/L	NC	3	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,2-Dichloroethane	µg/L	NC	0.6	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,2-Dichloroethene (total)	µg/L	NC	NC	-	-	-	--	--	--	-	10 U	--
1,2-Dichloropropane	µg/L	NC	1	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	µg/L	NC	3	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	µg/L	NC	3	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
2-Butanone (Methyl Ethyl Ketone)	µg/L	50	NC	5.0 U	5.0 U	5.0 U	--	--	25 U	5.0 U	25 U	25 U
2-Chlorotoluene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	--	--	--	1.0 U	5.0 U	5.0 U
2-Chloroethyl vinyl ether	µg/L	NC	NC	--	--	--	25 U	25 U	--	--	--	--
2-Hexanone	µg/L	50	NC	5.0 U	5.0 U	5.0 U	--	--	25 U	5.0 U	25 U	25 U
3-Chlorotoluene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	--	--	--	--	5.0 U	5.0 U
4-Chlorotoluene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	--	--	--	1.0 U	5.0 U	5.0 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	µg/L	NC	NC	5.0 U	5.0 U	5.0 U	--	--	25 U	5.0 U	25 U	25 U
Acetone	µg/L	50	NC	5.0 U	5.0 U	5.0 U	25 U	25 U	25 U	5.0 U	2.8 J	25 U
Acrolein	µg/L	NC	5	--	--	--	100 U	100 U	--	--	--	--
Acrylonitrile	µg/L	NC	5	--	--	--	50 U	50 U	--	--	--	--
Benzene	µg/L	NC	1	0.84 J	**3.1**	**2.6**	**1.6 J**	0.62 J	5.0 U	0.18 J	5.0 U	5.0 U
Bromodichloromethane	µg/L	50	NC	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Bromoform	µg/L	50	NC	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Bromomethane (Methyl Bromide)	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Carbon disulfide	µg/L	60	NC	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	5.0 U	5.0 U
Carbon tetrachloride	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Chlorobenzene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Chloroethane	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	µg/L	NC	7	**10**	1.0 U	0.65 J	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Chloromethane (Methyl Chloride)	µg/L	NC	5	1.0 U	1.0 UJ	1.0 UJ	5.0 U	5.0 U	5.0 U	0.46 J	5.0 U	5.0 U
cis-1,2-Dichloroethene	µg/L	NC	5	1.0 U	1.6	1.2	0.84 J	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	µg/L	NC	NC	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Cyclohexane	µg/L	NC	NC	1.1	1.0 U	1.0 U	--	--	--	1.0 U	--	--
Dibromochloromethane	µg/L	50	NC	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Dibromodifluoromethane	µg/L	NC	NC	--	1.0 U	1.0 U	--	--	--	--	--	--
Dichlorodifluoromethane (CFC-12)	µg/L	NC	5	1.0 U	--	--	--	--	5.0 U	1.0 U	--	5.0 U
Ethylbenzene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Isopropylbenzene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	--	5.0 U
Methyl acetate	µg/L	NC	NC	1.0 U	1.0 U	1.0 U	--	--	--	5.0 U	--	--
Methyl cyclohexane	µg/L	NC	NC	1.8	1.0 U	1.0 U	--	--	--	1.0 U	--	--
Methyl Tert Butyl Ether	µg/L	10	NC	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	--	5.0 U
Methylene chloride	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Styrene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	5.0 U	5.0 U
Tetrachloroethene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Toluene	µg/L	NC	5	1.6	4.7 J	**9.8 J**	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Total Monochlorotoluenes	µg/L	NC	NC	1 U	1 U	1 U	5.0 U	5.0 U	25 U	-	5.0 U	5.0 U
trans-1,2-Dichloroethene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	0.96 J	5.0 U	5.0 U	1.0 U	--	5.0 U
trans-1,3-Dichloropropene	µg/L	NC	NC	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Trichloroethene	µg/L	NC	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U
Trichlorofluoromethane (CFC-11)	µg/L	NC	5	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	--	5.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	NC	5	1.0 U	1.0 U	1.0 U	--	--	5.0 U	1.0 U	--	5.0 U
Vinyl chloride	µg/L	NC	2	1.0 U	1.5	0.97 J	1.5 J	5.0 U	5.0 U	1.0 U	5.0 U	1.3 J
Xylene (total)	µg/L	NC	NC	3.0 U	2.0 U	2.0 U	--	--	10 U	2.0 U	10 U	10 U
Total VOCs	µg/L	NC	NC	15.34	10.9	15.22	5.67	1.27	0.75	1.31	3.45	1.3

Notes:

6.24 - Concentration exceed NYS TOGs
U - Not present at or above the associated MDL
J - Estimated concentration between the MDL and Reporting Limit
MDL - Method Detection Limit
NC - No criteria
NYS TOGs - New York State Technical and Operational Guidance Series
-- - Not analyzed

Table 2

Summary of Deep Groundwater (C-Zone) Analytical VOC Results - 2022 and Historical
Cascades Containerboard Packaging Site
Niagara Falls, New York

Parameter	Units	New York State TOGs Guidance Value	New York State TOGs Standard	Location ID: MW1-C-08 Sample Name: WG-11109628-100820-SG-008 Sample Date: 10/8/2020	MW1-C-08 WG-11109628-100621-SG-008 10/6/2021	MW1-C-08 WG-12595539-100522-KM-014 10/5/2022	MW2-C-08 GW-47392-120508-JJW-011 12/05/2008	MW2-C-08 GW-47392-040309-JJW-023 04/03/2009	MW2-C-08 WG-47392-100714-SG-011 10/7/2014	MW2-C-08 WG-11109628-100715-SG-008 10/07/2015	MW2-C-08 WG-11109628-102516-SG-006 10/25/2016
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
1,1,2,2-Tetrachloroethane	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
1,1,2-Trichloroethane	µg/L	NC	1	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
1,1-Dichloroethane	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
1,1-Dichloroethene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
1,2,4-Trichlorobenzene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 UJ	1.0 U	5.0 U	5.0 U	20 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	NC	0.04	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	20 U
1,2-Dibromoethane (Ethylene Dibromide)	µg/L	NC	0.0006	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	20 U
1,2-Dichlorobenzene	µg/L	NC	3	5.0 U	5.0 U	5.0 U	1.5	1.5	2.8 J	**6.2**	**6.8 J**
1,2-Dichloroethane	µg/L	NC	0.6	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
1,2-Dichloroethene (total)	µg/L	NC	NC	--	--	--	--	-	-	-	-
1,2-Dichloropropane	µg/L	NC	1	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
1,3-Dichlorobenzene	µg/L	NC	3	5.0 U	0.67 J	5.0 U	2.3	**3.1**	**3.4 J**	**13**	**20**
1,4-Dichlorobenzene	µg/L	NC	3	5.0 U	0.77 J	5.0 U	**3.6**	**4.0**	**7.8**	**25**	**37**
2-Butanone (Methyl Ethyl Ketone)	µg/L	50	NC	25 U	25 U	25 U	5.0 U	5.0 U	--	--	100 U
2-Chlorotoluene	ug/L	NC	5	5.0 U	5.0 U	5.0 U	2.0	1.0 U	--	--	--
2-Chloroethyl vinyl ether	µg/L	NC	NC	--	--	--	--	--	25 U	25 U	--
2-Hexanone	µg/L	50	NC	25 U	25 U	25 U	5.0 U	5.0 U	--	--	100 U
3-Chlorotoluene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	2.3	--	--	--
4-Chlorotoluene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	--
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	µg/L	NC	NC	25 U	25 U	25 U	5.0 U	5.0 U	--	--	100 U
Acetone	µg/L	50	NC	25 U	25 U	25 U	5.0 UJ	5.0 U	25 U	25 U	100 U
Acrolein	µg/L	NC	5	--	--	--	--	--	100 U	100 U	--
Acrylonitrile	µg/L	NC	5	--	--	--	--	--	50 U	50 U	--
Benzene	µg/L	NC	1	5.0 U	5.0 U	5.0 U	**33**	**30**	**8.6**	**12**	**13 J**
Bromodichloromethane	µg/L	50	NC	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	--	20 U
Bromoform	µg/L	50	NC	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Bromomethane (Methyl Bromide)	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Carbon disulfide	µg/L	60	NC	5.0 U	5.0 U	5.0 U	0.57 J	1.0 U	--	--	20 U
Carbon tetrachloride	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Chlorobenzene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	**24**	**26**	**38**	**86**	**120**
Chloroethane	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Chloroform (Trichloromethane)	µg/L	NC	7	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Chloromethane (Methyl Chloride)	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
cis-1,2-Dichloroethene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	2.8	2.6	5.0 U	0.67 J	20 U
cis-1,3-Dichloropropene	µg/L	NC	NC	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Cyclohexane	µg/L	NC	NC	--	--	--	1.0 U	1.0 U	--	--	--
Dibromochloromethane	µg/L	50	NC	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Dibromodifluoromethane	µg/L	NC	NC	--	--	--	--	1.0 U	--	--	--
Dichlorodifluoromethane (CFC-12)	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	--	--	--	20 U
Ethylbenzene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Isopropylbenzene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	20 U
Methyl acetate	µg/L	NC	NC	--	--	--	1.0 UJ	1.0 UJ	--	--	--
Methyl cyclohexane	µg/L	NC	NC	--	--	--	1.0 U	1.0 U	--	--	--
Methyl Tert Butyl Ether	µg/L	10	NC	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	20 U
Methylene chloride	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Styrene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	20 U
Tetrachloroethene	µg/L	NC	5	5.0 U	0.70 J	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Toluene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0	1.0 U	5.0 U	0.56 J	20 U
Total Monochlorotoluenes	µg/L	NC	NC	5.0 U	5.0 U	5.0 U	2	2.3	3.0 J	9.84 J	14 J
trans-1,2-Dichloroethene	µg/L	NC	5	5.0 U	5.0 U	5.0 U	0.80 J	0.61 J	5.0 U	5.0 U	20 U
trans-1,3-Dichloropropene	µg/L	NC	NC	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	20 U
Trichloroethene	µg/L	NC	5	5.0 U	0.92 J	5.0 U	0.63 J	0.52 J	5.0 U	5.0 U	20 U
Trichlorofluoromethane (CFC-11)	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	20 U
Trifluorotrichloroethane (Freon 113)	µg/L	NC	5	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	--	--	20 U
Vinyl chloride	µg/L	NC	2	1.4 J	5.0 U	5.0 U	2.0	**3.0**	0.85 J	1.1 J	20 U
Xylene (total)	µg/L	NC	NC	10 U	10 U	10 U	3.0 U	2.0 U	--	--	40 U
Total VOCs	µg/L	NC	NC	1.4	3.06	5.0 U	74.2	73.63	64.45	154.37	210.8

Notes:

6.24 - Concentration exceed NYS TOGs
U - Not present at or above the associated MDL
J - Estimated concentration between the MDL and Reporting Limit
MDL - Method Detection Limit
NC - No criteria
NYS TOGs - New York State Technical and Operational Guidance Series
-- - Not analyzed

Table 2

Summary of Deep Groundwater (C-Zone) Analytical VOC Results - 2022 and Historical
Cascades Containerboard Packaging Site
Niagara Falls, New York

				Location ID:	MW2-C-08	MW2-C-08	MW2-C-08	MW2-C-08	MW2-C-08	MW2-C-08	MW3-C-08	MW3-C-08
				Sample Name:	WG-11109628-100417-SG-011	WG-11109628-100318-SG-012	WG-11109628-100319- SG-016	WG-11109628-100820-SG-014	WG-11109628-100620-DT-009	WG-12595539-100522-KM-015	GW-47392-120408-JJW-006	GW-47392-040109-JJW-019
				Sample Date:	10/04/2017	10/03/2018	10/03/2019	10/8/2020	10/6/2021	10/5/2022	12/04/2008	04/01/2009
Parameter	**Units**	**New York State TOGs Guidance Value**	**Standard**									
Volatile Organic Compounds (VOCs)												
1,1,1-Trichloroethane	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	NC	1		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	NC	5		0.25 J	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	NC	0.04		1.0 U	--	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene Dibromide)	µg/L	NC	0.0006		1.0 U	--	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	NC	3		**6.9**	**6.2 J**	**5.2**	**6.2 J**	**7.9 J**	**5.7 J**	0.54 J	0.58 J
1,2-Dichloroethane	µg/L	NC	0.6		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	µg/L	NC	NC		-	20 U	--	--	--	--	-	-
1,2-Dichloropropane	µg/L	NC	1		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	NC	3		**22**	**23**	**19**	**27**	**38**	**31**	0.50 J	0.47 J
1,4-Dichlorobenzene	µg/L	NC	3		**41**	**40**	**36**	**51**	**70**	**60**	1.0	1.2
2-Butanone (Methyl Ethyl Ketone)	µg/L	50	NC		5.0 U	50 U	25 U	100 U	100 U	100 U	5.0 U	5.0 U
2-Chlorotoluene	ug/L	NC	5		**13**	**18**	**17**	**26**	**29**	**33**	0.67 J	1.0 U
2-Chloroethyl vinyl ether	µg/L	NC	NC		--	--	--	--	--	--	--	--
2-Hexanone	µg/L	50	NC		5.0 U	50 U	25 U	100 U	100 U	100 U	5.0 U	5.0 U
3-Chlorotoluene	µg/L	NC	5		--	10 U	1.2 J	1.7 J	20 U	1.2 J	1.0 U	0.56 J
4-Chlorotoluene	µg/L	NC	5		0.90 J	0.76 J	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	µg/L	NC	NC		5.0 U	50 U	25 U	100 U	100 U	100 U	5.0 U	5.0 U
Acetone	µg/L	50	NC		5.7	50 U	25 U	100 U	100 U	100 U	5.0 U	5.0 U
Acrolein	µg/L	NC	5		--	--	--	--	--	--	--	--
Acrylonitrile	µg/L	NC	5		--	--	--	--	--	--	--	--
Benzene	µg/L	NC	1		**6.5**	**3.9 J**	**2.2 J**	20 U	20 U	20 U	0.83 J	1.0 U
Bromodichloromethane	µg/L	50	NC		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Bromoform	µg/L	50	NC		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Carbon disulfide	µg/L	60	NC		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Chlorobenzene	µg/L	NC	5		**120**	**120**	**110**	**140**	**160**	**150**	1.3	1.1
Chloroethane	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	NC	7		1.0 U	10 U	5.0 U	20 U	20 U	20 U	0.60 J	1.0 U
Chloromethane (Methyl Chloride)	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 UJ
cis-1,2-Dichloroethene	µg/L	NC	5		0.56 J	10 U	5.0 U	20 U	20 U	20 U	1.8	1.9
cis-1,3-Dichloropropene	µg/L	NC	NC		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Cyclohexane	µg/L	NC	NC		--	--	--	--	--	--	1.0 U	1.0 U
Dibromochloromethane	µg/L	50	NC		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Dibromodifluoromethane	µg/L	NC	NC		--	--	--	--	--	--	--	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	NC	5		1.0 U	--	5.0 U	20 U	20 U	20 U	1.0 U	--
Ethylbenzene	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Isopropylbenzene	µg/L	NC	5		1.0 U	--	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Methyl acetate	µg/L	NC	NC		5.0 U	--	--	--	--	--	1.0 U	1.0 U
Methyl cyclohexane	µg/L	NC	NC		1.0 U	--	--	--	--	--	1.0 U	1.0 U
Methyl Tert Butyl Ether	µg/L	10	NC		1.0 U	--	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Methylene chloride	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Styrene	µg/L	NC	5		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	NC	5		0.92 J	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Toluene	µg/L	NC	5		0.44 J	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Total Monochlorotoluenes	µg/L	NC	NC		13.9	18.76	18.2	27.7	29	34.2	0.67 J	0.56 J
trans-1,2-Dichloroethene	µg/L	NC	5		1.0 U	--	5.0 U	20 U	20 U	20 U	0.54 J	0.73 J
trans-1,3-Dichloropropene	µg/L	NC	NC		1.0 U	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Trichloroethene	µg/L	NC	5		0.62 J	10 U	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	NC	5		1.0 U	--	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	NC	5		1.0 U	--	5.0 U	20 U	20 U	20 U	1.0 U	1.0 U
Vinyl chloride	µg/L	NC	2		0.58 J	10 U	5.0 U	20 U	20 U	20 U	1.5	1.0 U
Xylene (total)	µg/L	NC	NC		2.0 U	20 U	10 U	40 U	40 U	40 U	3.0 U	2.0 U
Total VOCs	µg/L	NC	NC		219.37	211.86	189.6	251.9	304.9	280.9	9.28	6.54

Notes:

6.24	- Concentration exceed NYS TOGs
U	- Not present at or above the associated MDL
J	- Estimated concentration between the MDL and Reporting Limit
MDL	- Method Detection Limit
NC	- No criteria
NYS TOGs	- New York State Technical and Operational Guidance Series
--	- Not analyzed

Table 2

Summary of Deep Groundwater (C-Zone) Analytical VOC Results - 2022 and Historical
Cascades Containerboard Packaging Site
Niagara Falls, New York

Parameter	Units	New York State TOGs Guidance Value	New York State TOGs Standard	Location ID:	MW3-C-08	MW3-C-08	MW3-C-08	MW3-C-08	MW3-C-08	MW3-C-08	MW3-C-08	MW3-C-08	MW3-C-08
				Sample Name:	WG-47392-100714-SG-012	WG-11109628-100715-DT-007	WG-11109628-102616-SG-008	WG-11109628-100417-SG-009	WG-11109628-100418-DT-017	WG-11109628-100319-DJT-017	WG-11109628-100820-SG-016	WG-11109628-100721-DT-011	WG-12595539-100522-KM-010
				Sample Date:	10/7/2014	10/07/2015	10/26/2016	10/04/2017	10/04/2018	10/03/2019	10/8/2020	10/7/2021	10/5/2022
Volatile Organic Compounds (VOCs)													
1,1,1-Trichloroethane	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
1,1,2,2-Tetrachloroethane	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
1,1,2-Trichloroethane	µg/L	NC	1		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
1,1-Dichloroethane	µg/L	NC	5		5.0 U	5.0 U	5.0 U	0.88 J	10 U	5.0 U	10 U	10 U	5.0 U
1,1-Dichloroethene	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
1,2,4-Trichlorobenzene	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	NC	0.04		--	--	5.0 U	1.0 U	--	--	10 U	10 U	5.0 U
1,2-Dibromoethane (Ethylene Dibromide)	µg/L	NC	0.0006		--	--	5.0 U	1.0 U	--	--	10 U	10 U	5.0 U
1,2-Dichlorobenzene	µg/L	NC	3		5.0 U	0.98 J	**3.5 J**	**9.1 J**	**42**	**25**	**16**	**17**	**8.7**
1,2-Dichloroethane	µg/L	NC	0.6		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
1,2-Dichloroethene (total)	µg/L	NC	NC		--	-	--	--	20 U	--	--	--	--
1,2-Dichloropropane	µg/L	NC	1		5.0 U	5.0 U	5.0 U	1.0 U	10 U	50 U	10 U	10 U	5.0 U
1,3-Dichlorobenzene	µg/L	NC	3		5.0 U	1.7 J	**3.2 J**	**6.1 J**	**26**	**20**	**16**	**17**	**10**
1,4-Dichlorobenzene	µg/L	NC	3		1.0 J	**3.3 J**	**13**	**34 J**	**140**	**86**	**62**	**76**	**48**
2-Butanone (Methyl Ethyl Ketone)	µg/L	50	NC		--	--	25 U	5.0 U	50 U	25 U	50 U	50 U	25 U
2-Chlorotoluene	ug/L	NC	5		--	--	--	3.6 J	**16**	**16**	**11**	**9.6 J**	5
2-Chloroethyl vinyl ether	µg/L	NC	NC		25 U	25 U	--	--	--	--	--	--	--
2-Hexanone	µg/L	50	NC		--	--	25 U	5.0 U	50 U	25 U	50 U	50 U	25 U
3-Chlorotoluene	µg/L	NC	5		--	--	25 U	--	10 U	5 U	10 U	10 U	5.0 U
4-Chlorotoluene	µg/L	NC	5		--	--	25 U	1.4 J	**6.3 J**	1.7 J	0.93 J	0.90 J	0.49 J
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	µg/L	NC	NC		--	--	25 U	5.0 U	50 U	25 U	50 U	50 U	25 U
Acetone	µg/L	50	NC		25 U	25 U	25 U	8.0 J	50 U	25 U	50 U	50 U	25 U
Acrolein	µg/L	NC	5		100 U	100 U	--	--	--	--	--	--	--
Acrylonitrile	µg/L	NC	5		50 U	50 U	--	--	--	--	--	--	--
Benzene	µg/L	NC	1		5.0 U	5.0 U	5.0 U	**2.2 J**	**4.9 J**	**4.3 J**	**2.8 J**	10 U	5.0 U
Bromodichloromethane	µg/L	50	NC		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Bromoform	µg/L	50	NC		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Bromomethane (Methyl Bromide)	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Carbon disulfide	µg/L	60	NC		--	--	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Carbon tetrachloride	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Chlorobenzene	µg/L	NC	5		5.0 U	1.1 J	**5.6**	**13 J**	**56**	**39**	**30**	**45**	**19**
Chloroethane	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Chloroform (Trichloromethane)	µg/L	NC	7		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Chloromethane (Methyl Chloride)	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
cis-1,2-Dichloroethene	µg/L	NC	5		1.6 J	**45**	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
cis-1,3-Dichloropropene	µg/L	NC	NC		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Cyclohexane	µg/L	NC	NC		--	--	--	1.0 U	--	--	--	--	5.0 U
Dibromochloromethane	µg/L	50	NC		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	--
Dibromodifluoromethane	µg/L	NC	NC		--	--	--	--	--	--	--	--	5.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	NC	5		--	--	5.0 U	1.0 U	--	--	10 U	10 U	--
Ethylbenzene	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Isopropylbenzene	µg/L	NC	5		--	--	5.0 U	1.0 U	--	--	10 U	10 U	5.0 U
Methyl acetate	µg/L	NC	NC		--	--	--	1.0 U	--	--	--	--	5.0 U
Methyl cyclohexane	µg/L	NC	NC		--	--	--	1.0 U	--	--	--	--	--
Methyl Tert Butyl Ether	µg/L	10	NC		--	--	5.0 U	1.0 U	--	--	10 U	10 U	--
Methylene chloride	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Styrene	µg/L	NC	5		--	--	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Tetrachloroethene	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Toluene	µg/L	NC	5		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Total Monochlorotoluenes	µg/L	NC	NC		5.0 U	5.0 U	2.75 J	5	22.3	17.7	11.93	10.5	5.49
trans-1,2-Dichloroethene	µg/L	NC	5		5.0 U	0.70 J	5.0 U	0.21 J	--	--	10 U	10 U	5.0 U
trans-1,3-Dichloropropene	µg/L	NC	NC		5.0 U	5.0 U	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Trichloroethene	µg/L	NC	5		5.0 U	1.8 J	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Trichlorofluoromethane (CFC-11)	µg/L	NC	5		--	--	5.0 U	1.0 U	--	--	10 U	10 U	5.0 U
Trifluorotrichloroethane (Freon 113)	µg/L	NC	5		--	--	5.0 U	1.0 U	--	--	10 U	10 U	5.0 U
Vinyl chloride	µg/L	NC	2		0.93 J	**9**	5.0 U	1.0 U	10 U	5.0 U	10 U	10 U	5.0 U
Xylene (total)	µg/L	NC	NC		--	--	10 U	2.0 U	20 U	10 U	20 U	20 U	5.0 U
Total VOCs	µg/L	NC	NC		3.53	63.58	28.05	78.49	291.2	192.0	138.73	165.5	91.19

Notes:

6.24 - Concentration exceed NYS TOGs
U - Not present at or above the associated MDL
J - Estimated concentration between the MDL and Reporting Limit
MDL - Method Detection Limit
NC - No criteria
NYS TOGs - New York State Technical and Operational Guidance Series
-- - Not analyzed

Table 3

Analytical Results Summary
Annual Groundwater Sampling - PFCs and 1,4-Dioxane
Cascades Containerboard Packaging Company
Niagara Falls, New York
October 2022

Location ID:		MW1-9A	MW9	BH87-28	MW13	MW88-13A
Sample Name:		WG-12595539-100422-KM-004	WG-12595539-100322-KM-002	WG-12595539-100422-KM-003	WG-12595539-100322-KM-001	WG-12595539-100422-KM-005
Sample Date:		10/4/2022	10/3/2022	10/4/2022	10/3/2022	10/5/2022
Per/Polyfluoroalkyl Substances (PFAS)						
Fluorotelomer sulfonic acid(8:2)	ng/L	26	16	3.6	53	74
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.2 U	4.1 U	4.1 U	4.0 U	4.2 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.2 U	4.1 U	4.1 U	4.0 U	4.2 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	0.85 J	1.4 J	1.6 U	2.5	2.8
Perfluorobutanoic acid (PFBA)	ng/L	100	31	170	55	460
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.7 U	1.6 U	1.6 U	1.6 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	0.63 J	0.30 J	1.6 U	1.8	3
Perfluorododecanoic acid (PFDoDA)	ng/L	1.7 U	1.6 U	1.6 U	1.6 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.7 U	1.6 U	1.6 U	0.59 J	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	38	13	54	28	110
Perfluorohexane sulfonic acid (PFHxS)	ng/L	2	1.4 J	15 J	2.4	19
Perfluorohexanoic acid (PFHxA)	ng/L	94	35	190	72	290
Perfluorononanoic acid (PFNA)	ng/L	2.6	1.0 J	1.6 U	10	7.4 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.7 U	0.83 J	1.6 U	2.3	1.8
Perfluorooctane sulfonic acid (PFOS)	ng/L	2.5	1.6 U	4.3	34	24
Perfluorooctanoic acid (PFOA)	ng/L	55	24	44	52	91
Perfluoropentanoic acid (PFPeA)	ng/L	240	77	580	230	770
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.7 U	1.6 U	1.6 U	1.6 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.7 U	1.6 U	1.6 U	1.6 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.7 U	1.6 U	1.6 U	1.6 U	1.7 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	300	180	470	310	1400

Location ID:		MW1-9A	MW9	BH87-28	MW13	MW88-13A
Sample Name:		WG-12595539-100422-KM-006	WG-12595539-100422-KM-008	WG-12595539-100622-KM-016	WG-12595539-100622-KM-020	WG-12595539-100422-KM-007
Sample Date:		10/4/2022	10/4/2022	10/6/2022	10/6/2022	10/4/2022
Semi-volatile Organic Compounds, SIM						
1,4-Dioxane	µg/L	8.6	9.9	4.6	1.2	15

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW1-9A	MW1-9A	MW1-9A
Sample Name:		WG-11109628-012318-DT-003	WG-11109628-092818-DT-004	WG-11109628-100119-DJT-001
Sample Date:		01/23/2018	09/28/2018	10/01/2019
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	820	390	1400
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	20 U	17 U	190 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	20 U	17 U	190 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.0 U	1.5 J	19 U
Perfluorobutanoic acid (PFBA)	ng/L	230 J	230	540
Perfluorodecanesulfonic acid (PFDS)	ng/L	2.0 U	1.7 U	19 U
Perfluorodecanoic acid (PFDA)	ng/L	9.8	3.9	18 J
Perfluorododecanoic acid (PFDoDA)	ng/L	2.0 U	1.7 U	19 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	0.84 J	0.77 J	19 U
Perfluoroheptanoic acid (PFHpA)	ng/L	290	140	420
Perfluorohexane sulfonic acid (PFHxS)	ng/L	5.5	4.8	19 U
Perfluorohexanoic acid (PFHxA)	ng/L	750	410	1200
Perfluorononanoic acid (PFNA)	ng/L	28	14	53
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 J	0.60 J	19 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	26	11	19
Perfluorooctanoic acid (PFOA)	ng/L	460	230	700
Perfluoropentanoic acid (PFPeA)	ng/L	1000	620	1700
Perfluorotetradecanoic acid (PFTeDA)	ng/L	2.0 U	1.7 U	19 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	2.0 U	1.7 U	19 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2.0 U	1.7 U	19 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	7100	3700	10000 J
Total Perfluorinated Compounds (PFCs)	ng/L	10,722.04	5,756.57	16,050

			MW1-9A	MW1-9A
			WG-11109628-100418-SG-016	WG-11109628-100219-DJT-011
			10/04/2018	10/2/2019
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	-	69	130

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW1-9A	MW1-9A	MW1-9A
Sample Name:		WG-1119628-100720-SG-002	WG-1119628-100521-SG-004	WG-12595539-100422-KM-004
Sample Date:		10/07/20	10/5/2021	10/4/2022
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	380	66	26
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.0 U	4.5 U	4.2 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.0 U	4.5 U	4.2 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.6 U	1.8 U	0.85 J
Perfluorobutanoic acid (PFBA)	ng/L	190	110	100
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.6 U	1.8 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	3.4	1.2 J	0.63 J
Perfluorododecanoic acid (PFDoDA)	ng/L	1.6 U	1.8 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.6 U	1.8 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	120	46 J	38
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.1	2.7	2
Perfluorohexanoic acid (PFHxA)	ng/L	330	140	94
Perfluorononanoic acid (PFNA)	ng/L	11	5.9	2.6
Perfluorooctane sulfonamide (FOSA)	ng/L	1.2 J	1.8 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	12	4.2	2.5
Perfluorooctanoic acid (PFOA)	ng/L	190	73	55
Perfluoropentanoic acid (PFPeA)	ng/L	450	230	240
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.6 U	1.8 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.6 U	1.8 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.6 U	1.8 U	1.7 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	2700	810	300
Total Perfluorinated Compounds (PFCs)	ng/L	4391.7	1489.0	861.6

		MW1-9A	MW1-9A	MW1-9A
		WG-11109628-100820-SG-010	WG-1119628-100521-SG-004	WG-12595539-100422-KM-006
		10/08/20	10/5/2021	10/4/2022
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	20	13	8.6

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW9	MW9	MW9
Sample Name:		WG-11109628-012318-DT-004	WG-11109628-092818-DT-005	WG-11109628-100119-DJT-005
Sample Date:		01/23/2018	09/28/2018	10/01/2019
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	730	66 J	96 J
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	21 U	16 U	200 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	21 U	16 U	200 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.1 U	1.1 J	20 U
Perfluorobutanoic acid (PFBA)	ng/L	290 J	140	120
Perfluorodecanesulfonic acid (PFDS)	ng/L	2.1 U	1.6 U	20 U
Perfluorodecanoic acid (PFDA)	ng/L	9.2	0.89 J	20 U
Perfluorododecanoic acid (PFDoDA)	ng/L	2.1 U	1.6 U	20 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	0.71 J	1.6 U	20 U
Perfluoroheptanoic acid (PFHpA)	ng/L	230	62	88
Perfluorohexane sulfonic acid (PFHxS)	ng/L	12	2.4	20 U
Perfluorohexanoic acid (PFHxA)	ng/L	650	190	290
Perfluorononanoic acid (PFNA)	ng/L	20	4.6	7.5 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.7 J	1.6 U	20 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	23	7.0	7.9 J
Perfluorooctanoic acid (PFOA)	ng/L	350	95	140
Perfluoropentanoic acid (PFPeA)	ng/L	840	290	390
Perfluorotetradecanoic acid (PFTeDA)	ng/L	2.1 U	1.6 U	20 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	2.1 U	1.6 U	20 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2.1 U	1.6 U	20 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	6300	2100	2800 J
Total Perfluorinated Compounds (PFCs)	ng/L	9,456.61	2,958.99	3,939.40

			MW1-9A	MW9
			WG-11109628-100418-SG-016	WG-11109628-100219-DJT-013
			10/04/2018	10/2/2019
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	-	36	54

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW9	MW9	MW9
Sample Name:		WG-1119628-100720-SG-003	WG-1119628-100521-SG-003	WG-12595539-100322-KM-002
Sample Date:		10/07/20	10/5/2021	10/3/2022
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	250	44	16
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.1 U	4.5 U	4.1 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.1 U	4.5 U	4.1 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.5	3.7	1.4 J
Perfluorobutanoic acid (PFBA)	ng/L	150	41	31
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.6 U	1.8 U	1.6 U
Perfluorodecanoic acid (PFDA)	ng/L	3.5	1.2 J	0.30 J
Perfluorododecanoic acid (PFDoDA)	ng/L	1.6 U	1.8 U	1.6 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.6 U	1.8 U	1.6 U
Perfluoroheptanoic acid (PFHpA)	ng/L	110	21	13
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3	1.0 J	1.4 J
Perfluorohexanoic acid (PFHxA)	ng/L	290	69	35
Perfluorononanoic acid (PFNA)	ng/L	8.6	3.4	1.0 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.6 U	1.8 U	0.83 J
Perfluorooctane sulfonic acid (PFOS)	ng/L	6.7	4.6	1.6 U
Perfluorooctanoic acid (PFOA)	ng/L	160	38	24
Perfluoropentanoic acid (PFPeA)	ng/L	440	100	77
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.6 U	1.8 U	1.6 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.6 U	1.8 U	1.6 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.6 U	1.8 U	1.6 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	2800	570	180
Total Perfluorinated Compounds (PFCs)	ng/L	4225.6	896.9	380.93

		MW9	MW9	MW9
		WG-11109628-100219-DJT-013	WG-1119628-100521-SG-003	WG-12595539-100422-KM-008
		10/2/2019	10/5/2021	10/4/2022
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	39	15	9.9

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		**BH87-28**	**BH87-28**	**BH87-28**
Sample Name:		**WG-11109628-100820-SG-005**	**WG-11109628-100521-SG-002**	**WG-12595539-100422-KM-003**
Sample Date:		**10/08/20**	**10/5/2021**	**10/4/2022**
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	28 J	8.6	3.6
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.2 U	4.5 U	4.1 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.2 U	4.5 U	4.1 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	0.55 J	1.8 U	1.6 U
Perfluorobutanoic acid (PFBA)	ng/L	59	110	170
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.7 U	1.8 U	1.6 U
Perfluorodecanoic acid (PFDA)	ng/L	1.7 U	1.8 U	1.6 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.7 U	1.8 U	1.6 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.7 U	1.8 U	1.6 U
Perfluoroheptanoic acid (PFHpA)	ng/L	16	28 J	54
Perfluorohexane sulfonic acid (PFHxS)	ng/L	10 U	8.1	15 J
Perfluorohexanoic acid (PFHxA)	ng/L	76	150	190
Perfluorononanoic acid (PFNA)	ng/L	1.7 U	1.8 U	1.6 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.7 U	1.8 U	1.6 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	8.4	7.1	4.3
Perfluorooctanoic acid (PFOA)	ng/L	19	36	44
Perfluoropentanoic acid (PFPeA)	ng/L	120	290	580
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.7 U	1.8 U	1.6 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.7 U	1.8 U	1.6 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.7 U	1.8 U	1.6 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	380	570	470
Total Perfluorinated Compounds (PFCs)	ng/L	706.95	1,207.80	1530.9

		BH87-28	**BH87-28**	**BH87-28**
		WG-11109628-100820-SG-011	**WG-11109628-100521-SG-002**	**WG-12595539-100622-KM-016**
		10/08/20	**10/5/2021**	**10/6/2022**
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	0.56	2.7	4.6

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW13	MW13	MW13
Sample Name:		WG-11109628-012318-DT-005	WG-11109628-092818-DT-001	WG-11109628-100119-SG-002
Sample Date:		01/23/2018	09/28/2018	10/01/2019
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	200	7.6 J	4.4 J
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	20 U	17 U	20 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	20 U	17 U	20 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.0 U	1.7 U	0.31 J
Perfluorobutanoic acid (PFBA)	ng/L	200	94	120
Perfluorodecanesulfonic acid (PFDS)	ng/L	2.0 U	1.7 U	2.0 U
Perfluorodecanoic acid (PFDA)	ng/L	21	0.53 J	2.0 U
Perfluorododecanoic acid (PFDoDA)	ng/L	2.0 U	1.7 U	2.0 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	2.0 U	1.7 U	2.0 U
Perfluoroheptanoic acid (PFHpA)	ng/L	280	33	51
Perfluorohexane sulfonic acid (PFHxS)	ng/L	2.5	1.7 U	2.0 U
Perfluorohexanoic acid (PFHxA)	ng/L	410	160	220
Perfluorononanoic acid (PFNA)	ng/L	120	1.4 J	1.8 J
Perfluorooctane sulfonamide (FOSA)	ng/L	2.0 U	1.7 U	0.36 J
Perfluorooctane sulfonic acid (PFOS)	ng/L	49	4.9	5.6
Perfluorooctanoic acid (PFOA)	ng/L	430	21	37
Perfluoropentanoic acid (PFPeA)	ng/L	1100	470	630
Perfluorotetradecanoic acid (PFTeDA)	ng/L	2.0 U	1.7 U	2.0 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	2.0 U	1.7 U	2.0 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2.0 U	1.7 U	2.0 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	2400	270	430
Total Perfluorinated Compounds (PFCs)	ng/L	5,212.50	1,062.43	1,500.47

			MW13	MW13
			WG-11109628-100318-SG-006	WG-11109628-100119-SG-002
			10/03/2018	10/01/2019
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	-	1.2	1.2

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW13	MW13	MW13
Sample Name:		WG-1119628-100720-SG-004	WG-1119628-100521-SG-001	WG-12595539-100322-KM-001
Sample Date:		10/07/20	10/5/2021	10/3/2022
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	130	23	53
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.0 U	4.6 U	4.0 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.0 U	4.6 U	4.0 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	0.68 J	2.5	2.5
Perfluorobutanoic acid (PFBA)	ng/L	62	93	55
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.6 U	1.9 U	1.6 U
Perfluorodecanoic acid (PFDA)	ng/L	2.8	1.9 U	1.8
Perfluorododecanoic acid (PFDoDA)	ng/L	1.6 U	1.9 U	1.6 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.6 U	0.38 J	0.59 J
Perfluoroheptanoic acid (PFHpA)	ng/L	48	36	28
Perfluorohexane sulfonic acid (PFHxS)	ng/L	2.3	3.0	2.4
Perfluorohexanoic acid (PFHxA)	ng/L	110	140	72
Perfluorononanoic acid (PFNA)	ng/L	13	5.2	10
Perfluorooctane sulfonamide (FOSA)	ng/L	1.4 J	1.9 U	2.3
Perfluorooctane sulfonic acid (PFOS)	ng/L	35	33	34
Perfluorooctanoic acid (PFOA)	ng/L	69	48	52
Perfluoropentanoic acid (PFPeA)	ng/L	270	370	230
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.6 U	1.9 U	1.6 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.6 U	1.9 U	1.6 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.6 U	1.9 U	1.6 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	800	310	310
Total Perfluorinated Compounds (PFCs)	ng/L	1544.18	1064.08	853.59

		MW13	MW13	MW13
		WG-11109628-100820-SG-007	WG-1119628-100521-SG-001	WG-12595539-100622-KM-020
		10/08/20	10/5/2021	10/6/2022
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	1	0.20 U	1.2

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Table 4

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW88-13A	MW88-13A	MW88-13A
Sample Name:		WG-11109628-012318-DT-002	WG-11109628-092818-DT-003	WG-11109628-100119-DJT-003
Sample Date:		01/23/2018	09/28/2018	10/01/2019
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	110 J	59 J	110 J
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	19 U	17 U	19 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	19 U	17 U	19 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.0	1.9	1.9 U
Perfluorobutanoic acid (PFBA)	ng/L	1100 J	180 J	220 J
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.7 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	2.6	1.9 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.7 U	1.9 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	0.68 J	0.48 J	0.50 J
Perfluoroheptanoic acid (PFHpA)	ng/L	65	65	60
Perfluorohexane sulfonic acid (PFHxS)	ng/L	21	20	12
Perfluorohexanoic acid (PFHxA)	ng/L	180	180	160
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	1.7 U	1.9 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9	1.5 J	1.9
Perfluorooctane sulfonic acid (PFOS)	ng/L	37	39	37
Perfluorooctanoic acid (PFOA)	ng/L	110	100	95
Perfluoropentanoic acid (PFPeA)	ng/L	270	260	250
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.7 U	1.9 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.7 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.7 U	1.9 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	3000 J	3200	2200
Total Perfluorinated Compounds (PFCs)	ng/L	4,897.58	4,109.48	3,146.40

			MW88-13A	MW88-13A
			WG-11109628-100418-SG-014	WG-11109628-100219-SG-012
			10/04/2018	10/2/2019
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	-	23	19

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW88-13A	MW88-13A	MW88-13A
Sample Name:		WG-1119628-100720-SG-001	WG-1119628-100521-SG-005	WG-12595539-100422-KM-005
Sample Date:		10/07/20	10/5/2021	10/5/2022
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	280	86	74
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	1.7 J	4.5 U	4.2 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.1 U	4.5 U	4.2 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.6 U	0.93 J	2.8
Perfluorobutanoic acid (PFBA)	ng/L	360 J	120	460
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.6 U	1.8 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	2.6	2.6	3
Perfluorododecanoic acid (PFDoDA)	ng/L	0.49 J	0.51 J	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.6 U	1.8 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	56	59	110
Perfluorohexane sulfonic acid (PFHxS)	ng/L	22 U	5.9	19
Perfluorohexanoic acid (PFHxA)	ng/L	170	160	290
Perfluorononanoic acid (PFNA)	ng/L	5.6	9.3	7.4 J
Perfluorooctane sulfonamide (FOSA)	ng/L	2.0	1.2 J	1.8
Perfluorooctane sulfonic acid (PFOS)	ng/L	33	18	24
Perfluorooctanoic acid (PFOA)	ng/L	73	62	91
Perfluoropentanoic acid (PFPeA)	ng/L	260	280	770
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.6 U	1.8 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.6 U	1.8 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.6 U	1.8 U	1.7 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	1800	980	1400
Total Perfluorinated Compounds (PFCs)	ng/L	3,044.39	1,785.44	3,253.00

		MW88-13A	MW88-13A	MW88-13A
		WG-11109628-100820-SG-006	WG-1119628-100521-SG-005	WG-12595539-100422-KM-007
		10/08/20	10/5/2021	10/4/2022
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	20	10	15

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Summary of PFC ad 1,4-Dioxane Sampling Results - 2018 - 2022 Sampling Events
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW12	MW12	MW12
Sample Name:		WG-11109628-012318-DT-001	WG-11109628-092818-DT-002	WG-11109628-100119-SG-004
Sample Date:		01/23/2018	09/28/2018	10/01/2019
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
Fluorotelomer sulfonic acid(8:2)	ng/L	2.3 J	83 U	6.1 J
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	20 U	17 U	20 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	20 U	17 U	20 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	4.2	2.9	1.2 J
Perfluorobutanoic acid (PFBA)	ng/L	180	140	88
Perfluorodecanesulfonic acid (PFDS)	ng/L	2.0 U	1.7 U	2.0 U
Perfluorodecanoic acid (PFDA)	ng/L	1.4 J	1.7 U	1.0 J
Perfluorododecanoic acid (PFDoDA)	ng/L	2.0 U	1.7 U	2.0 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	0.36 J	1.7 U	0.29 J
Perfluoroheptanoic acid (PFHpA)	ng/L	60	34	33
Perfluorohexane sulfonic acid (PFHxS)	ng/L	11	20	6.8
Perfluorohexanoic acid (PFHxA)	ng/L	290	160	160
Perfluorononanoic acid (PFNA)	ng/L	5.2	1.7 U	3.7
Perfluorooctane sulfonamide (FOSA)	ng/L	2.0 U	0.64 J	0.52 J
Perfluorooctane sulfonic acid (PFOS)	ng/L	26	15	14
Perfluorooctanoic acid (PFOA)	ng/L	70	44	37
Perfluoropentanoic acid (PFPeA)	ng/L	790	320	390
Perfluorotetradecanoic acid (PFTeDA)	ng/L	2.0 U	1.7 U	2.0 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	2.0 U	1.7 U	2.0 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2.0 U	1.7 U	2.0 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	160 J	680	140
Total Perfluorinated Compounds (PFCs)	ng/L	1,600.46	1,499.54	881.61

			MW12	MW12
			WG-11109628-100318-SG-008	WG-11109628-100219-SG-009
			10/03/2018	10/2/2019
Semi-volatile Organic Compounds, SIM				
1,4-Dioxane	µg/L	-	1.9	1.1

Notes:

SIM - Selective Ion Monitoring
J - Estimated concentration
U - Not detected at the associated reporting limit
- - Not applicable

Table 5

Analytical Results Summary
Requested Additional Sampling
Cascades Containerboard Packaging Site
Niagara Falls, New York
October 2022

Location ID:	**MW88-12A**	**MW88-8A**	**MW88-8B**
Sample Name:	**WG-125955398-100522-KM-012**	**WG-125955398-100522-KM-017**	**WG-125955398-100522-KM-019**
Sample Date:	**10/5/2022**	**10/5/2022**	**10/5/2022**
Parameters	**Unit**		
Volatile Organic Compounds			
1,1-Dichloroethane	µg/L	32 J	63	50 U
1,2,4-Trichlorobenzene	µg/L	50 U	6.5 J	50 U
1,2-Dichlorobenzene	µg/L	50 U	30 J	14 J
1,3-Dichlorobenzene	µg/L	50 U	44 J	110
1,4-Dichlorobenzene	µg/L	50 U	22 J	270
2-Chlorotoluene	µg/L	50 U	370	330
3-Chlorotoluene	µg/L	50 U	50 U	50 U
4-Chlorotoluene	µg/L	50 U	39 J	50 U
Acetone	µg/L	250 U	250 U	250 U
Benzene	µg/L	12 J	46 J	9.9 J
Chlorobenzene	µg/L	7.7 J	190	680
cis-1,2-Dichloroethene	µg/L	14 J	47000	62
Tetrachloroethene	µg/L	9.3 J	80000	65
Toluene	µg/L	100 U	490	50 U
Trichloroethene	µg/L	100 U	50 U	130
Vinyl chloride	µg/L	750	13000	31 J
Total SSPL VOCs	µg/L	825.0	141,301	1,701.90
Metals				
Arsenic	µg/L	11 J	20	15 U
Iron	µg/L	7100	620	1700
Potassium	µg/L	253000	477000	94700
Sodium	µg/L	41100	151000	102000
General Chemistry				
Phenolics (total)	µg/L	10 U	19	10 U
Fumigant				
Chloropicrin	µg/L	0.51 U	0.52 U	0.51 U

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit
SSPL - Site Specific Parameter List

Table 6

Analytical Results Summary - 2020 - 2022
Requested Additional Sampling
Cascades Containerboard Packaging Site
Niagara Falls, New York

Location ID:		MW88-12A	MW88-12A	MW88-12A	MW88-8A	MW88-8A	MW88-8A	MW88-8B	MW88-8B	MW88-8B
Sample Name:		WG-11109628-100920-SG-017	WG-11109628-100621-SG-010	WG-125955398-100522-KM-012	WG-11109628-100920-SG-018	WG-11109628-100721-SG-004	WG-125955398-100522-KM-017	WG-11109628-100920-SG-020	WG-11109628-100721-SG-002	WG-125955398-100522-KM-019
Sample Date:		10/09/20	10/6/2021	10/5/2022	10/09/20	10/7/2021	10/5/2022	10/09/20	10/7/2021	10/5/2022
Parameters	**Unit**									
Volatile Organic Compounds										
1,1-Dichloroethane	µg/L	150	43 J	32 J	2000 U	1000 U	63	50 U	1.8 J	50 U
1,2,4-Trichlorobenzene	µg/L	20 U	100 U	50 U	2000 U	1000 U	6.5 J	50 U	5.0 U	50 U
1,2-Dichlorobenzene	µg/L	20 U	100 U	50 U	2000 U	1000 U	30 J	140	39	14 J
1,3-Dichlorobenzene	µg/L	20 U	100 U	50 U	2000 U	1000 U	44 J	390	160	110
1,4-Dichlorobenzene	µg/L	20 U	100 U	50 U	2000 U	1000 U	22 J	640	430	270
2-Chlorotoluene	µg/L	11 J	100 U	50 U	2000 U	410 J	370	660	530	330
3-Chlorotoluene	µg/L	20 U	100 U	50 U	390 J	1000 U	50 U	50 U	3.9 J	50 U
4-Chlorotoluene	µg/L	20 U	100 U	50 U	2000 U	1000 U	39 J	17 J	5.0 U	50 U
Acetone	µg/L	100 U	500 U	250 U	10000 U	5000 U	250 U	250 U	25 U	250 U
Benzene	µg/L	120	14 J	12 J	2000 U	1000 U	46 J	27 J	15	9.9 J
Chlorobenzene	µg/L	15 J	100 U	7.7 J	260 J	220 J	190	1300	890	680
cis-1,2-Dichloroethene	µg/L	9500	13 J	14 J	54000	59000	47000	830	850	62
Tetrachloroethene	µg/L	4.1 J	9.3 J	9.3 J	120000	77000	80000	590	800	65
Toluene	µg/L	160	100 U	100 U	840 J	530 J	490	50 U	1.1 J	50 U
Trichloroethene	µg/L	13 J	100 U	100 U	180000	130000	50 U	1400	1700	130
Vinyl chloride	µg/L	25000	600	750	13000	12000	13000	160	59	31 J
Total SSPL VOCs	µg/L	34,958	679.3	825.0	368,490	279,160	141,301	6,154	5,479.80	1,701.90
Metals										
Arsenic	µg/L	11 J	15 U	11 J	22	16	20	15 U	15 U	15 U
Iron	µg/L	6700	7100	7100	330	680	620	1400	1500	1700
Potassium	µg/L	347000	253000	253000	636000	434000	477000	186000	109000	94700
Sodium	µg/L	76400	39500	41100	138000	156000	151000	149000	123000	102000
General Chemistry										
Phenolics (total)	µg/L	16	10 U	10 U	44	20	19	6.9 J	10 U	10 U
Fumigant										
Chloropicrin	µg/L	0.50 U	0.50 U	0.51 U	0.50 U	0.50 U	0.52 U	0.50 U	0.50 U	0.51 U

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit
SSPL - Site Specific Parameter List

Attachment A

GreenPac Well Development and Survey Letter

EnSol, Inc.
661 Main St.
Niagara Falls, NY 14301
716.285.3920

ensolinc.com

Transmitted Via Electronic Mail

September 23, 2022

Brian Harris
The Environmental Service Group
177 Wales Avenue
Tonawanda, NY 14150

Re: Summary of Well Development and Survey at:
Greenpac Mill LLC
4400 Royal Ave.
Niagara Falls, NY

Dear Mr. Harris:

This letter, and supporting attachments, has been prepared to summarize well development and top-of-casing (TOC) elevation survey activities that were conducted at the site on September 22, 2022 by EnSol, Inc. (EnSol). All work was conducted as partial response to the February 3, 2022 "Periodic Review Report (PRR) Response Letter" from the New York State Department of Environmental Conservation (NYSDEC) (Attachment 1) which was provided by you in support of scope-development for this work. Well repair activities were previously completed by The Environmental Service Group (ESG) at monitoring wells MW-13, MW1C-08, and BH87-3A which resulted in changes to the TOC elevations. Due to the nature of the pre-repair conditions of wells MW-13 and MW1C-08, and in direct response to the 2nd bullet of the NYSDEC PRR Response letter, well development activities were also required at these wells to remove any sediment that may have been introduced into the wells prior to completion of the repairs.

TOC Survey
EnSol had previously completed a TOC elevation survey of the monitoring well network following the completion of the OCC pad construction project in November 2020, which at the time resulted in altered TOC elevations at most of the monitoring wells within the network. Current/revised TOC elevations for wells MW-13, MW1C-08, and BH87-3A were calculated and tied into the previously established elevations. An updated table of all TOC elevations (November 2020 and September 2022 data combined) is included as Attachment 2 and, in summary, the new TOC elevations are as follows:

- MW-13: 573.08
- MW1C-08: 573.31
- BH87-3A: 574.63

Well Development
Monitoring wells MW-13 and MW1C-08 were developed via dedicated check valve/surge block/HDPE tubing combinations with purging action provided by use of a Rotapump portable inertial lift pump (info. sheet provided as Attachment 3). No water was added/introduced, all development was via removal only. Depth to water (DTW) and depth to bottom (DTB) measurements were obtained at each well prior to development. A minimum of three well volumes of water was removed from each well and observations of water clarity were documented during purging. Upon completion of purging the DTB was re-measured to determine any change in depth (indicating

removal of sediment). The complete field report is included as Attachment 4 and a summary of development data is as follows:

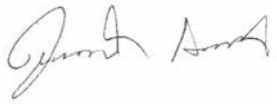
Well	Pre-Development				Post-Development				Notes
	DTW (init.)	DTB (init.)	3 Well Vols.	Color / Clarity	Gals. Purged	Well Vols. Purged	DTB (final)	DTB (change)	
MW-13	28.52’	32.9’	2.13g	Black	3	4.2	33.26’	0.36’	No color change
MW-1C-08	18.27’	69.15’	99.63g	Black	105	3.2	69.15’	none	Black to gray color change

Purge Water Management
Three 55-gallon drums of purge water were generated during the well development activities. A composite sample was collected from the drums and was submitted to Paradigm Environmental Services for laboratory analysis of volatile organic compounds (VOCs), flashpoint, and PCBs. Once received, the analytical data will be provided to ESG for final disposal profiling.

Please contact me if you have any questions or require additional information.

Sincerely,

EnSol, Inc.



Jeremiah M. Smith, P.G.
Senior Geologist

cc: Craig Eddy – Greenpac Mill LLC
Shaun McEvoy – GHD
Brian D. Shiah, P.E. – EnSol

Attachments:
Attachment 1 – 2/3/22 NYSDEC PRR Response Letter
Attachment 2 – Table: Monitoring Well Survey Update (Revised 9/22/22)
Attachment 3 – Rotapump Information Sheet
Attachment 4 – 9/22/22 Field Report

Attachment 1

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL

2/3/22 NYSDEC PRR Response Letter

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7220 | F: (716) 851-7226
www.dec.ny.gov

February 3, 2022

Walter Li
Cascades Containerboard Packaging Inc.
4626 Royal Avenue
Niagara Falls, NY 14303

Re: Periodic Review Report (PRR) Response Letter
Frontier Chemical – Royal Avenue
Site No.: 932110
Niagara Falls, Niagara County

Dear Walter Li,

The New York State Department of Environmental Conservation (the Department) has reviewed your Periodic Review Report (PRR) and IC/EC Certification for the period of November 18, 2020 to November 18, 2021. The Department hereby accepts the PRR and associated Certification for the 2020–2021 year with the following conditions:

- As detailed in the October 4, 2021 inspection report, monitoring wells MW01-9A, MW-9, MW1C-08, and MW-13 require repair. These repairs need to be addressed during the 2021–2022 reporting period;

- The inspection report further states that MW1C-08 and MW-13 are broken at the coupler and are allowing surface water/dirt into the monitoring well. Both MW1C-08 and MW-13 need to be repaired and should be redeveloped prior to the 2022 sampling event;

- MW88-13A is listed to be in fair condition. Please take the appropriate measures to prevent further damage to this monitoring well; and

- Per February 11, 2020 and June 24, 2021 PRR response letters, the Department requested that monitoring wells MW88-12A, MW88-8A, and MW88-8B be sampled during the 2020 and 2021 annual monitoring events. During both monitoring events all three monitoring wells have displayed significant concentrations of volatile organic compounds (VOCs). Based on these detections, these monitoring wells require further monitoring and should be incorporated into the annual site monitoring plan.

A schedule for repairing the damaged wells will be provided to the Department by March 4, 2022. If you wish to discuss these matters in more detail feel free to contact me at (716) 541-9657 or via e-mail at joshua.vaccaro@dec.ny.gov.

Sincerely,

Joshua M. Vaccaro
Project Manager

ec:

Benjamin McPherson – NYSDEC
Craig Eddy – Cascades Containerboard Packaging Inc.
Shaun McEvoy – GHD, Niagara Falls
Richard Snyder – GHD, Niagara Falls

Attachment 2

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL

Table: Monitoring Well Survey Update (Revised 9/22/22)

MONITORING WELL SURVEY UPDATES
GREENPAC MILLS, NIAGARA FALLS, NY
(Revised 9/22/22)

Well	Elevation (EnSol 11/9/20 & 9/22/22)	Well Survey Comments (EnSol 11/9/20 & 9/22/22)	Measuring Point Elevation (ft. amsl)	Depth to Water (ft) - 5/12/20	Groundwater Elevation (ft. amsl)	
MW-13	**573.08**	**Top of Inner Casing 2" PVC (Flush Mount)**	574.34	29.21	545.13	
MW88-4A	572.81	Top of Outer Casing 4" steel (no I.C.)	573.37	15.21	558.16	
MW88-4B	572.76	Top of Outer Casing 4" steel (no I.C.)	573.32	18.83	554.49	
MW-14	573.43	Top of Outer Casing 4" steel (no I.C.)	573.98	16.42	557.56	
MW90-1B	572.99	Top of Inner Casing 4" steel (Flush Mount)	572.46	24.83	547.63	
MW90-1A	572.68	Top of Inner Casing 4" steel (Flush Mount)	572.48	15.12	557.36	
MW90-1C	572.42	Top of Inner Casing 2" steel (Flush Mount)				
MW88-1A	-	Not Found	572.9	Can't locate		
MW88-1B	-	Not Found	573.03	Can't locate		
MW-17	-	Not Found	Destroyed	Destroyed		
MW88-10A	573.72	Top of Outer Casing 4" steel (no I.C.)	574.28	16.41	557.87	
MW88-10B	573.91	Top of Outer Casing 4" steel (no I.C.)	574.46	16.61	557.85	
MW88-10C	574.20	Top of Inner Casing 2" S.S.				
MW-15	-	Not Found	572.72	14.21	558.51	
BH87-2B	572.95	Top of Inner Casing 1-1/2" PVC	573.23	22.22	551.01	
BH87-2A	572.67	Top of Inner Casing 1-1/2" PVC	573.5	16.49	557.01	
BH87-2C	573.41	Top of Inner Casing 1-1/2" PVC				
MW-2	-	Not Found	572.28	Can't locate		
MW01-9A	575.17	Top of Outer Casing 4" steel (no I.C.)	573.64	19.21	554.43	
MW-9	573.73	Top of Inner Casing PVC	574.28	22.56	551.72	
MW88-13A	579.86	Top of Inner Casing 4" PVC	573.84	17.58	556.26	
MW88-9A	572.00	Top of Inner Casing 4" steel (Flush Mount)	573.67	17.06	556.61	Well damaged
MW88-9B	571.71	Top of Inner Casing 4" steel (Flush Mount)	572.98	Dry or Obstructed at 24.65	548.33	Well damaged
MW88-9C	571.91	Top of Inner Casing 2" steel (Flush Mount)				
BH87-28	574.15	Top of Inner Casing 1-1/2" PVC	574.7	24.41	550.29	
MW-12	573.26	Top of Inner Casing 2" PVC	573.02	24.74	548.28	
MW-11	577.27	Top of Outer Casing 4" steel (I.C. broke)				
MW-11A	572.79	Top of Outer Casing 4" steel on cap lid rim				
BH87-5A	572.34	Top of Inner Casing 1-1/2" PVC (Flush Mount)	573.23	6.72	566.51	
BH87-5C	573.14	Top of Inner Casing 1-1/2" PVC				
BH87-5A?	573.09	Top of Inner Casing 1-1/2" PVC				
MW88-12A	572.34	Top of Inner Casing 4" steel (Flush Mount)	573.35	17.14	556.21	
MW88-12B	572.31	Top of Inner Casing 4" steel (Flush Mount)	572.79	Dry or obstructed at 23.73	549.06	
MW88-8A	572.96	Top of Inner Casing 4" steel (Flush Mount)	572.77	16.98	555.79	
MW88-8B	573.09	Top of Inner Casing 4" steel (Flush Mount)	572.75	27.9	544.85	
MW88-8C	572.97	Top of Inner Casing 2" S.S. (Flush Mount)				
BH87-3A	**574.63**	**Top of Inner Casing 1-1/2" PVC**	573.13	16.22	556.91	
BH87-3B	572.56	Top of Inner Casing 1-1/2" PVC	573.14	19.08	554.06	
BH87-3C	572.56	Top of Inner Casing 1-1/2" PVC				
BH87-3D	572.86	Top of Inner Casing 1-1/2" PVC				
MW1C-08	**573.31**	**Top of Inner Casing 4" steel (Flush Mount)**	572.22	20.31	551.91	
MW1D-08	572.45	Top of Inner Casing 4" steel (Flush Mount)	572.67	20.74	551.93	
MW1E-08	574.38	Top of Outer Casing 4" steel (no I.C.)	572.4	20.6	551.8	
MW2C-08	572.68	Top of Outer Casing 4" steel (no I.C.)	572.76	20.67	552.09	
MW2D-08	570.78	Top of Inner Casing 4" steel (Flush Mount)	572.7	20.52	552.18	
MW2E-08	571.31	Top of Inner Casing 4" steel (Flush Mount)	573.29		573.29	
MW3B-08	572.76	Top of Outer Casing 4" steel (no I.C.)				
MW3C-08	572.63	Top of Outer Casing 4" steel (no I.C.)	572.6	20.23	552.37	
MW3D-08	572.86	Top of Outer Casing 4" steel (no I.C.)	572.83	20.61	552.22	
MW3E-08	-	Not Found	572.74	21.61	551.13	

Well stickup altered prior to May 2020 water level measurements

EnSol Notes:
1. All elevations measured on north side of casing.
2. Elevations relative to NAVD 1988, based on Bench Mark BM-1 Elev. 570.97 as shown on Beardsley Architects & Engineers Drawings for OCC Storage Area (July 2019), from Surveys by Nussbaumer & Clarke.
3. All wells found and surveyed by EnSol are shown on this table in red. Refer to EnSol's Monitoring Wells Location Sketch dated 11/9/20 for all wells found & surveyed.
4. Original well elevation table provided to EnSol by GHD for use and reference. Only 11/9/20 and 9/22/22 data and comments shown are by EnSol. Values in Bold are updated 9/22/22.

Attachment 3

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL

Rotapump Information Sheet

ROTAPUMP - One Groundwater Sampling Pump for All Your Wells!

Adopt a new paradigm. Sample more wells in a day, avoid decontamination, eliminate cross contamination, and insure sample integrity. Use Rotapump, a 12, 24, or 48 VDC, flow controlled, portable inertial lift pump. Use one pump to develop and low-flow sample wells with water level as deep as 100 feet. Simple setup for pumping and low flow sampling. Complete package includes pump, mounted DC motor, and speed controller for purchase price of $2,200 exclusive of shipping and tax. Surface and abovegrade pump mounts are shown below.

Surface Mount

Aboveground Mount

View videos at www.rotapump.com, email rotapump@comcast.net, or call 707/ 354- 4618 to discuss how Rotapump meets your sampling requirements.

Attachment 4

EnSol, Inc.

ENGINEERING + ENVIRONMENTAL

9/22/22 Field Report

EnSol, Inc.
Environmental Solutions

661 Main Street
Niagara Falls, NY 14301

Professional Engineering • Business Consulting

Ph (716) 285-3920 • Fx (716) 285-3928

DAILY FIELD REPORT NO.:

FIELD REPORT

PROJECT: WELL DEVELOPMENT + T.O.C. SURVEY **CLIENT:** GREENPAC		**DATE:** 9/22/22 **SHEET NO.** 1 **OF** 5 **PROJECT NO.:** 012-N0001
CONTRACTOR: ESG	**CONTRACT NO.:**	**DAY OF WEEK:** S M T W (T) F S
REPORT BY: SAM DAIGLER	**SIGNATURE:**	
WEATHER: ~~Wind From:~~ N NE E SE S SW W NW at ___ mph Sunny Partly Cloudy Cloudy Overcast Sprinkles (Showers) Thunderstorms		**TEMPERATURE:** LOW 55°F HIGH

Daily Objective

DEVELOP WELLS MW-13 + MWIC-08
SURVEY WELL TOC @ MW-13, MWIC-08, BH87-3A

Field Notes

ARRIVED ON-SITE @ 7:50AM
MET SHAUN AND OBTAINED WELL KEY
CALLED CRAIG EDDY AND FOLLOWED DIRECTIONS TO WELLS

LOCATED MW-13, BEGAN OBTAINING DEPTHS, STARTED PURGING
1100 - 3 gal PURGED, DRY

LOCATED MWIC-08, OBTAINED DEPTHS, SET UP PUMP, STARTED PURGING (1140)
1435 - 105g PURGED, NO CHANGE IN DTB.
COLLECTED COMPOSITE SAMPLE

BRIAN SITIA ON-SITE TO SURVEY NEW TOC (1445)

RETURNED WELL KEY TO SHAUN AFTER SURVEY

DEPART SITE 1630

DROPPED SAMPLE PW-1 @ PARADIGM 9/23/22 0835

Testing/Samples

COMPOSITE SAMPLE OF PURGE WATER: VOCs
FLASHPOINT
PCBs

Site Visitors

N/A

32.90
28.52
((4.38)(0.16))(3) = 2.13 gal = 3 WELL VOLUMES

GROUNDWATER WELL DEVELOPMENT LOG

Monitoring Well/Piezometer No. MW-13
Date Installed: _____
Concrete Surface Seal (Y) N
Northing: TBD
Easting: TBD — SURVEY
Ground Surface Elevation: TBD

Well developed by: SAM DAIGLER
Form completed by: SAM DAIGLER
Development Method: PURGING
Development Equipment: HDPE TUBING
WATERRA FOOT VALVE
ALNATING PUMP

Top of PVC Riser Below Steel Casing: _____
Top of Steel Casing Stickup: N/A (FLUSH MOUNT)
Top of PVC Screen: _____
Depth to Bottom of PVC Screen: _____
Screen Length: _____
Riser ID: _____
Depth to 2" Middle of Screen: _____

Activity	Date	Time (military)	Depth to Water from Top of Steel Riser (feet)	Ground Water Elevation (feet)	Volume Purged (gal)	pH (standard units)	Specific Cond. (uMhos/cm)	Water Temp (°C)	Turbidity (NTU)	Color (clarity)	Comments
	9/22/22	0833	28.52		0	-	-	-	-	-	32.9' TOTAL DEPTH
BEGIN PURGE		0905			0	-	-	-	-	BLACK	VISIBLE DEBRIS
		0913			1.0	-	-	-	-	BLACK	DRYING/LOWER PURGE RATE, LETTING RECHARGE
		0927			2.25					BLACK	
		- PAUSED TO RETRIEVE DRUMS FOR PURGE WATER -									
		1100			3.0	-	-	-	-	BLACK	RE-MEASURED DTB 33.26'
											TOTAL PURGED = 3 gal

Technician Signature: _____
Date: 9/22/22

69.15
18.27
50.88

1 W.V. = 33.21 gal
3 W.V. = 99.63 gal

GROUNDWATER WELL DEVELOPMENT LOG

Monitoring Well/Piezometer No. MW1C-08

Date Installed: _____

Concrete Surface Seal (Y) N

Northing: TBD
Easting: TBD } SURVEY
Ground Surface Elevation: TBD

Well developed by: SAM DAIGLER
Form completed by: SAM DAIGLER
Development Method: PURGING
Development Equipment: HDPE TUBING
WATERRA FOOT VALVE
ACTUATING PUMP

Top of PVC Riser Below Steel Casing: _____
Top of Steel Casing Stickup: N/A (FLUSH MOUNT)
Top of PVC Screen: _____
Depth to Bottom of PVC Screen: _____
Screen Length: _____
Riser ID: _____
Depth to 2" Middle of Screen: _____

Activity	Date	Time (military)	Depth to Water from Top of Steel Riser (feet)	Ground Water Elevation (feet)	Volume Purged (gal)	pH (standard units)	Specific Cond. (uMhos/cm)	Water Temp (°C)	Turbidity (NTU)	Color (clarity)	Comments
											69.15
	9/22/22	1120	18.27		0	-	-	-	-	-	~~18.27~~ DTB
BEGIN PURGE		1138			0	-	-	-	-	CLEARISH	GRAY TINT, FLOATING DEBRIS
		1155			5	-	-	-	-	GRAY/BLACK	BECAME VISIBLY MORE TURBID
		1204			10	-	-	-	-	BLACK	
		1213			15	-	-	-	-	BLACK	
		1226			20	-	-	-	-	BLACK	
		1238			25	-	-	-	-	BLACK	
		1245			30	-	-	-	-	BLACK	
		1252			35	-	-	-	-	BLACK	
		1259			40	-	-	-	-	GRAY/BLACK	SLIGHTLY CLEARING UP
		1305			45	-	-	-	-	GRAY/BLACK	
		1312			50	-	-	-	-	GRAY/BLACK	
		1319			55	-	-	-	-	GRAYISH TINT/CLEARING UP	
		1326			60	-	-	-	-	GRAYISH TINT	
		1334			65	-	-	-	-	GRAYISH TINT	UPON REMOVING TUBING, HOLE IN TUBING FOUND. REPLACED & CONTINUED
		1343			67	-	-	-	-	DRYING UP	
		1354			72	-	-	-	-	GRAYISH TINT	
		1400			77	-	-	-	-	GRAYISH TINT	
		1408			82	-	-	-	-	GRAYISH TINT	
		1415			87	-	-	-	-	GRAYISH TINT	

Technician Signature: _____

Date: 9/22/22

GROUNDWATER WELL DEVELOPMENT LOG

Monitoring Well/Piezometer No. MWIC-98 (CONT) | Well developed by: SJD | Top of PVC Riser Below Steel Casing: _____

Date Installed: _____ | Form completed by: SJD | Top of Steel Casing Stickup: _____

Concrete Surface Seal _Y _N | Development Method: _____ | Top of PVC Screen: _____

Northing: _____ | Development Equipment: _____ | Depth to Bottom of PVC Screen: _____

Easting: _____ | _____ | Screen Length: _____

Ground Surface Elevation: _____ | _____ | Riser ID: _____

Depth to 2" Middle of Screen: _____

Activity	Date	Time (military)	Depth to Water from Top of Steel Riser (feet)	Ground Water Elevation (feet)	Volume Purged (gal)	pH (standard units)	Specific Cond. (uMhos/cm)	Water Temp (°C)	Turbidity (NTU)	Color (clarity)	Comments
	9/22/22	1420			92	–	–	–	–	GRAYISH TINT	
		1425			97	–	–	–	–	GRAYISH TINT	
		1430			100	–	–	–	–	GRAYISH TINT	
		1435			105	–	–	–	–	GRAYISH TINT	
											NO CHANGE IN DEPTH TO BOTTOM (69.15')
											TOTAL PURGED = 105 gal

Technician Signature: _____

Date: 9/22/22

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

PARADIGM
ENVIRONMENTAL SERVICES, INC.

CHAIN OF CUSTODY

REPORT TO:	INVOICE TO:	
CLIENT: ENSOL	CLIENT: ENSOL	LAB PROJECT ID: GREENPAC NF
ADDRESS: 661 MAIN ST	ADDRESS: 661 MAIN ST	
CITY: NIAGARA FALLS STATE: NY ZIP: 14301	CITY: NIAGARA FALLS STATE: NY ZIP: 14301	Quotation #:
PHONE: (716) 285-3920	PHONE: (716) 285-3920	Email: JSMITH@ENSOLINC.COM
ATTN: JEREMIAH SMITH	ATTN: JEREMIAH SMITH	

PROJECT REFERENCE

Matrix Codes:
AQ - Aqueous Liquid; **NQ** - Non-Aqueous Liquid; **WA** - Water; **WG** - Groundwater; **DW** - Drinking Water; **WW** - Wastewater; **SO** - Soil; **SL** - Sludge; **SD** - Solid; **PT** - Paint; **WP** - Wipe; **CK** - Caulk; **OL** - Oil; **AR** - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS	PCBs	FLASH POINT	VOCs + CHLOROPICRIN							REMARKS	PARADIGM LAB SAMPLE NUMBER
9/22/22	1430	X		PW-1 (PURGE WATER)	WG	4	X	X	X	X						VOCs + CHLOROPICRIN	

Turnaround Time		Report Supplements			
Availability contingent upon lab approval; additional fees may apply.					
Standard 5 day	X	None Required	☐	None Required	☐
10 day	☐	Batch QC	☐	Basic EDD	☐
Rush 3 day	☐	Category A	☐	NYSDEC EDD	☐
Rush 2 day	☐	Category B	☐		
Rush 1 day	☐				
Date Needed _____ please indicate date needed: _____		Other please indicate package needed: _____	☐	Other EDD please indicate EDD needed: _____	☐

SAM DAIGLER	9/22/22 1430	Total Cost:
Sampled By	Date/Time	
SAM DAIGLER	9/23/22 0835	
Relinquished By	Date/Time	
[signature]	9/23/22 0835	P.I.F.
Received By	Date/Time	
Received @ Lab By	Date/Time	

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

See additional page for sample conditions.

Attachment B

October 2022 Site Inspection

SITE INSPECTION FORM
CASCADES CONTAINERBOARD PACKAGING SITE
NIAGARA FALLS, NEW YORK
NYSDEC SITE NO. 932110

INSPECTION DATE: 10/06/2022

INSPECTED BY: J. Kawecki D. Tyson K. Miller

Overall Site

Has the Site use changed since the last inspection? *Yes* _____ *No* ✓

If yes, please describe the changes: _____

Have neighboring property uses changed? *Yes* _____ *No* ✓

If yes, please describe the changes: _____

Asphalt/Concrete Cover System

Potential Problems	***Concern***	***Corrective Action***
Potholes and cracks	• Deterioration of asphalt pavement or concrete • Safety hazard	• Use cold mix or hot mix asphalt and liquid bituminous material to patch, repair, or replace asphalt • For concrete, select repair method based on type and extent of damage
Ponding water	• Safety hazard	• No action required if ponding is minor • If ponding is significant, install drainage holes in asphalt/concrete pavement
Obstructions/Debris	• Safety hazard	• Remove obstructions as soon as possible

Inspect For	***Inspection Item Identified (circle one)***		***Action Required (circle one)***		***Comments***
Deterioration	Yes	(No)	Yes	(No)	
Obstruction/Debris	Yes	(No)	Yes	(No)	
Potholes	Yes	(No)	Yes	(No)	
Drainage/Puddles	Yes	(No)	Yes	(No)	
Other	Yes	(No)	Yes	(No)	

K 2

SITE INSPECTION FORM
CASCADES CONTAINERBOARD PACKAGING SITE
NIAGARA FALLS, NEW YORK
NYSDEC SITE NO. 932110

INSPECTION DATE: 10/06/2022

INSPECTED BY: J. Kenerici

Soil Cover System

Potential Problems	***Concern***	***Corrective Action***
Erosion	• Deterioration of integrity of crushed concrete cover • Washed out cover	• Backfill with additional imported crushed stone as needed • If persistent erosion occurs, erosion control mats may be required in selected areas
Animal burrows	• Potential for crushed concrete erosion • Safety hazard	• Contract exterminator regarding trapping and relocation of persistent rodents • Fill all holes with crushed stone
Damage to fence	• Potential access to Site by unauthorized persons	• No action if damage is minor and does not allow access by unauthorized persons • Repair fence if appropriate

Inspect For	***Inspection Item Identified (circle one)***		***Action Required (circle one)***		***Comments***
Erosion	Yes	(No)	Yes	(No)	
Animal Burrows	Yes	(No)	Yes	(No)	
Damage to fence	Yes	(No)	Yes	(No)	
Other	Yes	(No)	Yes	(No)	

SITE INSPECTION FORM
CASCADES CONTAINERBOARD PACKAGING SITE
NIAGARA FALLS, NEW YORK
NYSDEC SITE NO. 932110

INSPECTION DATE: 10/06/2022

INSPECTED BY: J. Gawecki

Monitoring Wells

Potential Problems	***Concern***	***Corrective Action***
Missing locks	• Potential access by unauthorized persons	• Replace lock
Missing J-plugs	• Potential well contamination from surface water or rain water	• Replace J-plug
Concrete surface seal	• Damaged seal can allow water infiltration around casing and contamination of groundwater	• Contract drilling subcontractor to have surface seal replaced
Damaged flush-mount or stickup casing	• Damaged casing can result in damage to riser	• Contract drilling subcontractor to have casing replaced

Monitoring Well	***Well Condition (circle one)***			***Comments***
MW3C-08	(Good)	Fair	Needs Repair	
BH87-3A	(Good)	Fair	Needs Repair	
BH87-3B	(Good)	Fair	Needs Repair	
MW01-9A	(Good)	Fair	Needs Repair	
MW-9	(Good)	Fair	Needs Repair	
MW2C-08	(Good)	Fair	Needs Repair	
MW88-13A	(Good)	Fair	Needs Repair	
BH87-28	(Good)	Fair	Needs Repair	
MW-12	(Good)	Fair	Needs Repair	
MW1C-08	(Good)	Fair	Needs Repair	
MW-13	(Good)	Fair	Needs Repair	

Attachment C

May 2022 and November 2022 Semi-Annual Groundwater Discharge Reports

2055 Niagara Falls Boulevard
Niagara Falls, NY 14304
USA
www.ghd.com

Our ref: 11109628

25 May 2022

Mr. Joel Paradise
Niagara Falls Water Board
5815 Buffalo Avenue
Niagara Falls, NY 14304

Semi-annual Groundwater Discharge Report, SIU Permit #78,
Cascades Containerboard Packaging, Inc. (Former Frontier Chemical Site)

Dear Mr. Paradise:

This semiannual report has been prepared in accordance with Paragraph F of the Significant Industrial User Permit #78 effective on October 2, 2020 by the Niagara Falls Water Board to Cascades Containerboard Packaging, Inc. (formerly Norampac Industries, Inc. and formerly Frontier Chemical Site PRP Group) in Niagara Falls, New York (Site). The report presents the analytical data and field measurements taken for the semi-annual period covering December 2021 through May 2022. The data collected have been used to calculate the volume of groundwater and the chemical loading associated with the groundwater that discharges into the Falls Street Tunnel (FST) and the 47th Street Tunnel, which are located immediately adjacent to the Frontier Chemical Site.

1. Data Collection

Groundwater levels were measured in all of the available monitoring wells in the A Zone and B Zone of the bedrock formation at the Site. The groundwater levels were measured on April 4, 2022, and the data are presented on the attached Figures 1 and 2.

Groundwater samples were collected from the following monitoring wells on April 5, 2022 and analyzed for the list of parameters specified in Paragraphs E and F of the Permit.

A Zone

– MW01-9A
– MW88-13A
– BH87-28
– BH-87-3A

B Zone

– BH87-3B
– MW-9
– MW-12
– MW-13

2. Flow Calculation

The groundwater flow volume is calculated based upon the thickness of the bedrock aquifer through which the groundwater flows, the aquifer permeability, and the gradient (slope) of the groundwater table. These three factors are combined, using Darcy's Law of hydraulic flow, to determine the flow volume (Flow = permeability x gradient x cross sectional saturated area). The groundwater gradients used in the flow calculation are presented on Figures 1 and 2. The calculation of groundwater flow is presented in Table 1. The Bedrock A Zone migration boundary along the south side of the Site has been divided into the west side and the east side. The April 2022 groundwater levels show that a portion of the A Zone groundwater discharge from the western half of the Site continues to discharge towards Royal Avenue. The most likely receiver of the A Zone groundwater in this area is the underlying B Zone, which is captured by the 47th Street Tunnel.

The calculated volume of groundwater discharge to the tunnels from the entire Site for the December 2021 through May 2022 time period was 1,912 gallons per day.

It is noted that the groundwater in the B Zone continues to flow to the east toward 47th Street with no migration to the south. This flow pattern is consistent with the pattern that developed after the closure of a portion of the FST and was first measured during the October 19, 2012 groundwater monitoring event.

3. Loading Calculation

The chemical loading to the tunnel sewer system is determined by multiplying groundwater flow volume by the concentration of the chemicals in the groundwater at the downgradient boundary of the Site, adjacent to where the groundwater enters the tunnels. Since there are multiple wells available along the tunnels, the chemical concentrations of this group of wells have been averaged to provide the best estimate of chemical loading. The concentrations of chemicals present in the April 2022 groundwater samples, and the calculated chemical loadings to the tunnel sewers for each individual compound for each flow zone, are presented in Tables 2a, 2b, 2c, 3a, and 3b. The total daily chemical loading for each compound is summarized in Table 4.

4. Discharge Limitations

The calculated volume of groundwater discharge to the tunnels and the associated chemical loadings have been compared to the limitations of the Permit (see Table 5). The calculations show that all parameters are within the Permit limits.

It is noted that, while it is expected that the chemical loadings will decrease over time, some variability should be expected in the groundwater hydraulics and concentrations used to calculate the infiltration conditions; therefore, some flexibility is needed in the Permit limits for the Site. It is believed that the Permit limits are reasonable, given the current conditions and making allowance for some continued variation over time. However, if conditions change, modifications may be necessary.

5. Next Report

The next semiannual report will be submitted to the Niagara Falls Water Board by November 30, 2022.

Should you have any questions, please contact me.

Regards,

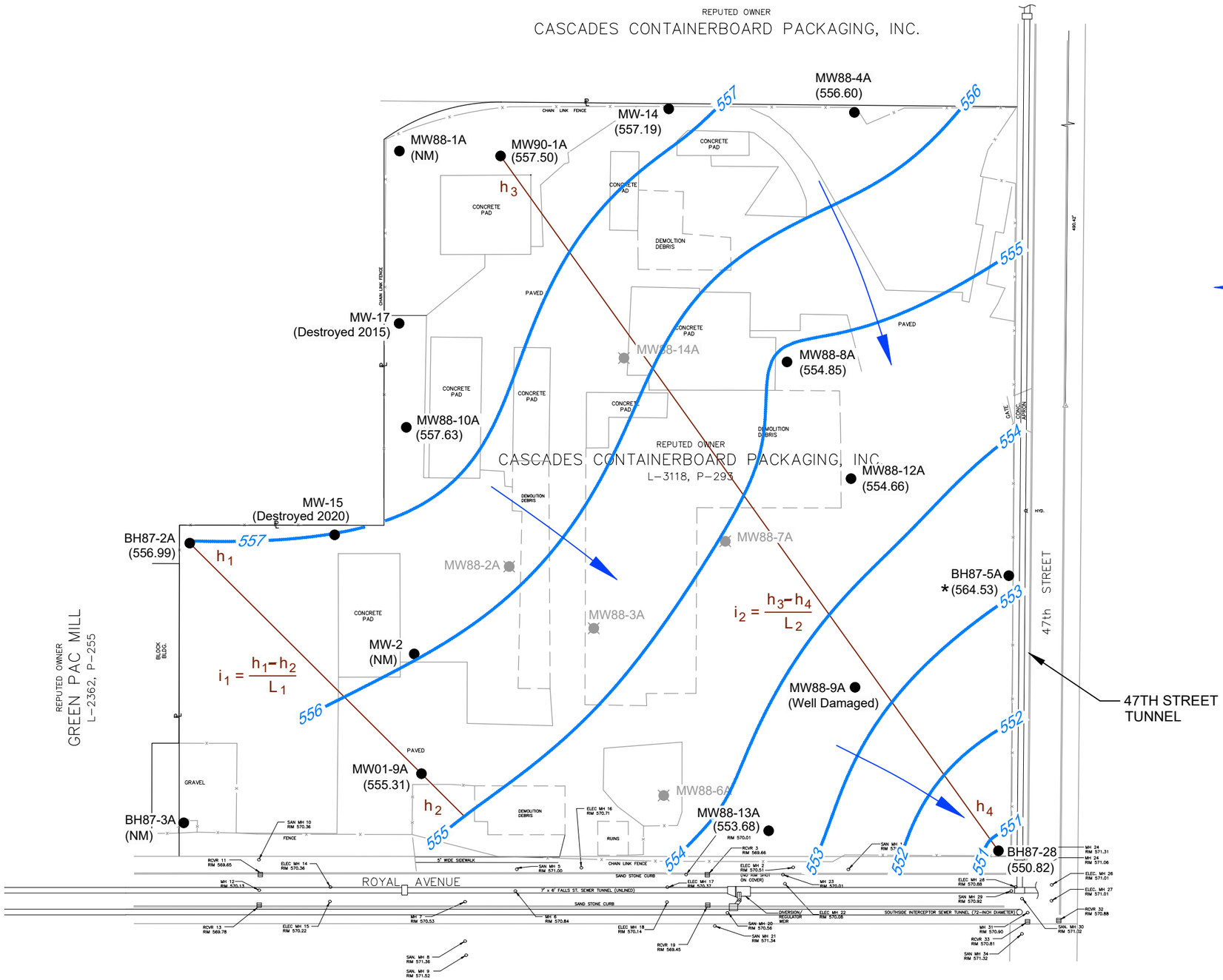
Shaun McEvoy
Engineer

+1 716 205-1975
shaun.mcevoy@ghd.com

SM/dl/15

Encl. SIU Permit Calculations and Permit Submittal Sheets

Copy to: Dr. Abderrahman Zehraoui, Niagara Falls Water Board
Doug Williamson, Niagara Falls Water Board
Walter Li, Cascades Containerboard Packaging, Inc.



LEGEND

● MW88-12A	A-ZONE MONITORING WELL LOCATION
✱ MW88-2A	WELL DECOMMISSIONED DURING 2013 SOIL REMEDIATION
(557.63)	GROUNDWATER ELEVATION (ft. AMSL)
(NM)	NOT MEASURED
*	ANOMALOUS VALUE, NOT USED IN CONTOURING
555	GROUNDWATER CONTOUR (ft. AMSL)
	GROUNDWATER FLOW DIRECTION

0 50 100 ft
1" = 100 ft

N

GHD

CASCADES CONTAINERBOARD PACKAGING, NIAGARA FALLS DIVISION
NIAGARA FALLS, NEW YORK

GROUNDWATER CONTOURS - ZONE A
APRIL 2022

Project No. **11109628**
Date **May 2022**

FIGURE 1

Filename: N:\US\Niagara Falls\Projects\564\11109628\Digital_Design\ACAD 2020\Figures\LTR-Paradise015\11109628-GHD-0000-LTR-EN-0101_WA-Paradise015.DWG
Plot Date: 12 May 2022 9:50 AM

REPUTED OWNER
CASCADES CONTAINERBOARD PACKAGING, INC.

REPUTED OWNER
GREEN PAC MILL
L-2362, P-255

REPUTED OWNER
PRAXAIR

REPUTED OWNER
CASCADES CONTAINERBOARD PACKAGING, INC.
L-3118, P-293

MW88-4B (554.65)
MW90-1B (548.67)
MW88-1B (NM)
MW-13 (545.99)
MW88-14B
MW88-8B (545.53)
MW88-10B (557.54)
MW88-12B (548.56)
MW88-2B
MW88-7BR
BH87-5C (NM)
MW88-3B
MW88-5B
MW88-9B (548.03)
BH87-2B (551.51)
MW-9 (551.45)
MW88-6B
MW-11
BH87-3B (554.99)
MW-12 (547.58)

$i_3 = \frac{h_5 - h_6}{L_3}$

h_5 h_6

47TH STREET TUNNEL

ROYAL AVENUE

LEGEND

● MW88-12B	B-ZONE MONITORING WELL LOCATION
⊗ MW88-2B	WELL DECOMMISIONED DURING 2013 SOIL REMEDIATION
(545.53)	GROUNDWATER ELEVATION (ft. AMSL)
(NM)	NOT MEASURED
550	GROUNDWATER CONTOUR (ft. AMSL)
	GROUNDWATER FLOW DIRECTION

0 50 100 ft
1" = 100 ft

N

GHD

CASCADES CONTAINERBOARD PACKAGING,
NIAGARA FALLS DIVISION
NIAGARA FALLS, NEW YORK

GROUNDWATER CONTOURS - ZONE B
APRIL 2022

Project No. **11109628**
Date **May 2022**

FIGURE 2

Filename: N:\US\Niagara Falls\Projects\564\11109628\Digital_Design\ACAD 2020\Figures\LTR-Paradise015\11109628-GHD-0000-LTR-EN-0102_WA-Paradise015.DWG
Plot Date: 12 May 2022 9:30 AM

Spring 2022 Groundwater Flow Rate Estimate
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

A) Bedrock A-Zone (Figure 1)

Royal Avenue West Side
Flow Thickness: Upper 3 to 5 feet of bedrock
Head Difference: = h1-h2
1.99

Distance between h1 & h2 = 338 ft

i = 1.99/338 = 0.0059

Flow Width: 350 ft
K = 2.5 x 10^{-5} to 5.2 x 10^{-5} ft/sec
Flow rate: = 5ft x 0.0059 x 350 ft x 5.2 x 10^{-5} ft/sec
= 5.37 x 10^{-4} ft^3/sec
= 368.4 USgal/day
= 134,457 USgal/year

Royal Avenue East Side
Flow Thickness: Upper 3 to 5 feet of bedrock
Head Difference: = h3-h4
= 6.68 ft

Distance between h3 & h4 = 740 ft

i = 6.68/740 = 0.0090

Flow Width: 390 ft
K = 2.5 x 10^{-5} to 5.2 x 10^{-5} ft/sec
Flow rate: = 5ft x 0.0090 x 390 ft x 5.2 x 10^{-5} ft/sec
= 9.1 x 10^{-4} ft^3/sec
= 589.9 USgal/day
= 212,324 USgal/year

47th Street South Side
Flow Thickness: Upper 3 to 5 feet of bedrock
Head Difference: = h3-h4
= 6.68 ft

Distance between h_3 & h_4 = 740 ft

i = 6.68/740 = 0.0090

Flow Width: 450 ft
K = 2.5 x 10^{-5} to 5.2 x 10^{-5} ft/sec
Flow rate: = 5ft x 0.0090 x 450 ft x 5.2 x 10^{-5} ft/sec
= 1.05 x 10^{-3} ft4/sec
= 680.5 USgal/day
= 248,391 USgal/year

Note:

See Figure 1 for locations of h_1, h_2, h_3 and h_4.

Spring 2022 Groundwater Flow Rate Estimate
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

B) Bedrock B-Zone (Figure 2)

Flow Thickness: 2-foot-thick fracture zone from 8 to 10 feet beneath A-Zone
Flow from B-Zone discharges to the east

• Easterly Flow:

Head Difference: = h_5-h_6 = 10.54 feet
Distance between h_5 & h_6 = 460 ft
Gradient (i): = 0.0229
Flow Width: = 660 ft
Hydraulic Conductivity: = 1.4 x 10^{-5} ft/sec
Flow rate: = 2ft x 0.0229 x 660 ft x 1.4 x 10^{-5} ft/sec
= 4.23 x 10^{-4} ft^3/sec
= 273.5 USgal/day
= 99,826 USgal/year

Note:

See Figure 2 for locations of h_5 and h_6.

Table 2A

A-Fracture Zone Bedrock, Royal Avenue West Side Discharge
April 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells MW-01-9A 4/5/2022	Adjacent Wells BH87-3A 4/5/2022	Average Concentration (µg/L) Adjacent Wells	Mass Flux (pounds/day) Adjacent Wells
VOCs by Method OLM04.2 (µg/L)				
1,1-Dichloroethane	**29**	50 U	17.0	0.000052
1,2,4-Trichlorobenzene	20 U	50 U	0.0	0.000000
1,2-Dichlorobenzene	**40**	**34 J**	37.0	0.000114
1,3-Dichlorobenzene	**700**	**90**	395.0	0.001214
1,4-Dichlorobenzene	**660**	**120**	390.0	0.001199
Acetone	100 U	250 U	0.0	0.000000
Benzene	**11 J**	50 U	8.0	0.000025
Chlorobenzene	**880**	**250**	565.0	0.001736
cis-1,2-Dichloroethene	**4.9 J**	**5.8 J**	5.4	0.000016
Tetrachloroethene	20 U	**9.5 J**	5.8	0.000018
Toluene	**3.9 J**	50 U	4.5	0.000014
Trichloroethene	20 U	**9.4 J**	5.7	0.000018
Vinyl chloride	**6.5 J**	50 U	5.8	0.000018
Monochlorotoluene	**351**	50 U	178.0	0.000547
SVOCs by Method OLM04.2 (µg/L)				
Phenol	**24**	10 U	12.5	0.000038
TAL Metals by Method ILM04.0 (µg/L)				
Arsenic	**18**	15 U	9.8	0.000030
Iron	**420**	**21 J**	220.5	0.000678
Potassium	**989,000**	**263000**	626000.0	1.923865
Sodium	**174,000**	**117000**	145500.0	0.447160

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration

(2) For U values where compound was not detected in any listed wells, the average concentration was set to 0 µg/L

(3) Flow rate = 368.4 US gallons/day

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

TAL - Target Analyte List

J - Estimated concetration

A-Fracture Zone Bedrock, Royal Avenue East Side Discharge
April 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells			Average Concentration (µg/L)	Mass Flux (pounds/day)
	BH87-28 4/5/2022	MW-88-6A	MW-88-13A 4/5/2022	Adjacent Wells	Adjacent Wells
VOCs by Method OLM04.2 (µg/L)					
1,1-Dichloroethane	**10 J**	**NS**	**210**	105.5	0.0005
1,2,4-Trichlorobenzene	**20 U**	**NS**	**220**	111.0	0.0005
1,2-Dichlorobenzene	**27**	**NS**	**3200**	1613.5	0.0079
1,3-Dichlorobenzene	**34**	**NS**	**730**	382.0	0.0019
1,4-Dichlorobenzene	**29**	**NS**	**1500**	764.5	0.0038
Acetone	100 U	**NS**	500 U	0.0	0.0000
Benzene	**140**	**NS**	**310**	225.0	0.0011
Chlorobenzene	**95**	**NS**	**570**	332.5	0.0016
cis-1,2-Dichloroethene	**29**	**NS**	**490**	259.5	0.0013
Tetrachloroethene	20 U	**NS**	**490**	246.0	0.0012
Toluene	**7.0 J**	**NS**	**120**	63.5	0.0003
Trichloroethene	20 U	**NS**	**660**	331.0	0.0016
Vinyl chloride	**120**	**NS**	100 U	65.0	0.0003
Monochlorotoluene	**33.6**	**NS**	**2370**	1201.8	0.0059
SVOCs by Method OLM04.2 (µg/L)					
Phenol	**12**	**NS**	**56**	34.0	0.0002
TAL Metals by Method ILM04.0 (µg/L)					
Arsenic	**6.6 J**	**NS**	**67**	36.8	0.0002
Iron	**100**	**NS**	**1200**	650.0	0.0032
Potassium	**2790000**	**NS**	**1030000**	1910000.0	9.3992
Sodium	**187000**	**NS**	**153000**	170000.0	0.8366

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration

(2) For U values where compound was not detected in any listed wells, the average concentration was set to 0 µg/L

(3) Flow rate = 589.9 US gallons/day

NS - Not samplable (Abandoned)

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

TAL - Target Analyte List

J - Estimated concentration

A-Fracture Zone Bedrock, 47th Street Discharge
April 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells		Average Concentration (µg/L)	Mass Flux (pounds/day)
	BH87-28 4/5/2022	BH87-5C	Adjacent Wells	Adjacent Wells
VOCs by Method OLM04.2 (µg/L)				
1,1-Dichloroethane	**10 J**	NS	10.0	0.000057
1,2,4-Trichlorobenzene	**20 U**	NS	0.0	0.000000
1,2-Dichlorobenzene	**27**	NS	27.0	0.000153
1,3-Dichlorobenzene	**34**	NS	34.0	0.000193
1,4-Dichlorobenzene	**29**	NS	29.0	0.000165
Acetone	100 U	NS	0.0	0.000000
Benzene	**140**	NS	140.0	0.000795
Chlorobenzene	**95**	NS	95.0	0.000539
cis-1,2-Dichloroethene	**29**	NS	29.0	0.000165
Tetrachloroethene	20 U	NS	0.0	0.000000
Toluene	**7.0 J**	NS	7.0	0.000040
Trichloroethene	20 U	NS	0.0	0.000000
Vinyl chloride	**120**	NS	120.0	0.000681
Monochlorotoluene	**33.6**	NS	33.6	0.000191
SVOCs by Method OLM04.2 (µg/L)				
Phenol	**12**	NS	12.0	0.000068
TAL Metals by Method ILM04.0 (µg/L)				
Arsenic	**6.6 J**	NS	6.6	0.000037
Iron	**100**	NS	100.0	0.000568
Potassium	**2790000**	NS	2790000.0	15.838459
Sodium	**187000**	NS	187000.0	1.061574

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration

(2) For U values where compound was not detected in any listed wells, the average concentration was set to 0 µg/L

(3) Flow rate = 680.5 US gallons/day

NS - Well not sampleable

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

TAL - Target Analyte List

J - Estimated concentration

Table 3A

B-Fracture Zone Bedrock - Southerly Discharge
April 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells					Average Concentration (µg/L) Southerly Discharge	Mass Flux (pounds/day) Adjacent Wells
	MW-9 4/5/2022	MW-11	MW-12 4/5/2022	BH87-3B 4/5/2022	MW-88-6B		
VOCs by Method OLM04.2 (µg/L)							
1,1-Dichloroethane	**32**	**NS**	20 U	100 U	**NS**	14.7	0.0000
1,2,4-Trichlorobenzene	40 U	**NS**	20 U	100 U	**NS**	0.0	0.0000
1,2-Dichlorobenzene	**14 J**	**NS**	20 U	**150**	**NS**	55.3	0.0000
1,3-Dichlorobenzene	40 U	**NS**	20 U	**250**	**NS**	85.3	0.0000
1,4-Dichlorobenzene	**7.4 J**	**NS**	20 U	**390**	**NS**	133.1	0.0000
Acetone	200 U	**NS**	100 U	500 U	**NS**	0.0	0.0000
Benzene	40 U	**NS**	20 U	100 U	**NS**	0.0	0.0000
Chlorobenzene	40 U	**NS**	20 U	**870**	**NS**	292.0	0.0000
cis-1,2-Dichloroethene	40 U	**NS**	20 U	100 U	**NS**	0.0	0.0000
Tetrachloroethene	40 U	**NS**	20 U	100 U	**NS**	0.0	0.0000
Toluene	40 U	**NS**	20 U	100 U	**NS**	0.0	0.0000
Trichloroethene	40 U	**NS**	20 U	100 U	**NS**	0.0	0.0000
Vinyl chloride	40 U	**NS**	20 U	100 U	**NS**	0.0	0.0000
Monochlorotoluene	40 U	**NS**	20 U	**71 J**	**NS**	25.7	0.0000
SVOCs by Method OLM04.2 (µg/L)							
Phenol	**6 J**	**NS**	**8.2 J**	10 U	**NS**	5.1	0.0000
TAL Metals by Method ILM04.0 (µg/L)							
Arsenic	**16**	**NS**	15 U	15 U	**NS**	6.3	0.0000
Iron	**190**	**NS**	**38 J**	**280**	**NS**	169.3	0.0000
Potassium	**962000**	**NS**	**2830000**	**405000**	**NS**	1399000.0	0.0000
Sodium	**211000**	**NS**	**216000**	**105000**	**NS**	177333.3	0.0000

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration
(2) For U values where compound was not detected in any listed well, the average concentration was set to 0 µg/L
(3) Flow rate = 0 US gallons/day
NS - Not sampleable (Abandoned)
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
J - Estimated concentration

Table 3B

B-Fracture Zone Bedrock - Easterly Discharge
April 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells MW-12 4/5/2022	Adjacent Wells MW-13 4/5/2022	Adjacent Wells BH87-5A	Average Concentration (µg/L) Easterly Discharge	Mass Flux (pounds/day) Adjacent Wells
VOCs by Method OLM04.2 (µg/L)					
1,1-Dichloroethane	20 U	**1.8 J / 1.9 J**	NS	1.9	4.39206E-06
1,2,4-Trichlorobenzene	20 U	5 U / 5 U	NS	0.0	0
1,2-Dichlorobenzene	20 U	5 U / 5 U	NS	0.0	0
1,3-Dichlorobenzene	20 U	**1.2 J / 1.2 J**	NS	1.6	3.65055E-06
1,4-Dichlorobenzene	20 U	**2.7 J / 2.5 J**	NS	2.3	5.24766E-06
Acetone	100 U	25 U / 25 U	NS	0.0	0
Benzene	20 U	**0.60 J / 0.62 J**	NS	1.3	2.97748E-06
Chlorobenzene	20 U	**3.2 J / 3.2 J**	NS	2.6	5.93214E-06
cis-1,2-Dichloroethene	20 U	**12 / 12**	NS	7.0	1.59711E-05
Tetrachloroethene	20 U	**1.3 J / 1.3 J**	NS	1.7	3.76463E-06
Toluene	20 U	5 U / 5 U	NS	0.0	0
Trichloroethene	20 U	**3.1 J / 3.0 J**	NS	2.5	5.76102E-06
Vinyl chloride	20 U	**2.9 J / 2.7 J**	NS	2.4	5.47582E-06
Monochlorotoluene	20 U	**70 / 73**	NS	36.8	8.38485E-05
SVOCs by Method OLM04.2 (µg/L)					
Phenol	**8.2 J**	10 U / 10 U	NS	4.6	1.04953E-05
TAL Metals by Method ILM04.0 (µg/L)					
Arsenic	15 U	15 U	NS	0.0	0
Iron	**38 J**	**5400 / 2100**	NS	1909.9	0.004357612
Potassium	**2830000**	**26700 / 20000**	NS	1426675.0	3.255089839
Sodium	**216000**	**130000 / 128000**	NS	172500.0	0.393574568

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentraion
(2) For U values where compound was not detected in any listed well, the average concentration was set to 0 µg/L
(3) Flow rate = 273.5 US gallons/day
NS - Not samplable (Abandoned)
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
J - Estimated concentration

Table 4

Total Chemical Flux
April 2022
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Zone A Royal Ave West Side Mass Flux Adjacent Wells (pounds/day)	Zone A Royal Avenue East Side Mass Flux Adjacent Wells (pounds/day)	Zone A 47th Street Mass Flux Adjacent Wells (pounds/day)	Zone B Easterly Flow Mass Flux Adjacent Wells (pounds/day)	Total (pounds/day)
VOCs by Method OLM04.2 (µg/L)					
1,1-Dichloroethane	< 0.0001	0.0005	< 0.0001	< 0.0000	0.0006
1,2,4-Trichlorobenzene	0.000000	0.0005	0.0000	< 0.0000	0.0005
1,2-Dichlorobenzene	0.000114	0.0079	0.0002	< 0.0000	0.0082
1,3-Dichlorobenzene	0.001214	0.0019	0.0002	< 0.0000	0.0033
1,4-Dichlorobenzene	0.001199	0.0038	0.0002	< 0.0000	0.0051
Acetone	0.000000	0.0000	0.0000	0.0000	0.0000
Benzene	< 0.0001	0.0011	0.0008	< 0.0000	0.0019
Chlorobenzene	0.001736	0.0016	0.0005	< 0.0000	0.0039
cis-1,2-Dichloroethene	< 0.0001	0.0013	< 0.0002	< 0.0000	0.0015
Tetrachloroethene	< 0.0001	0.0012	0.0000	< 0.0000	0.0012
Toluene	< 0.0001	0.0003	0.0000	0.0000	0.0004
Trichloroethene	< 0.0001	0.0016	0.0000	< 0.0000	0.0017
Vinyl chloride	< 0.0001	0.0003	0.0007	0.0000	0.0010
Monochlorotoluene	0.000547	0.0059	0.0002	< 0.0001	0.0067
Total VOCs	0.0050	0.0281	0.0030	0.0001	0.0361
SVOCs by Method OLM04.2 (µg/L)					
Phenol	< 0.0001	0.0002	< 0.0001	< 0.0001	0.0003
TAL Metals by Method ILM04.0 (µg/L)					
Arsenic	< 0.0001	0.0002	0.0000	0.0000	0.0002
Iron	0.000678	0.0032	0.0006	0.0044	0.0088
Potassium	1.923865	9.3992	15.8385	3.2551	30.4166
Sodium	0.447160	0.8366	1.0616	0.3936	2.7389

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List

Table 5

Comparisons of Loading to Interim Discharge Limitations
Cascades Containerboard Packaging, Inc. - Frontier Site – April 2022
Niagara Falls, New York

Outfall Number Effluent Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements		Calculated Daily Discharge May 2020 pounds/day Except as noted (gallons/day)
	Annual Average	Daily Maximum		Measurement Frequency	Sample Type	
MS #1 Flow		4000	gallons/day	2 per year	See E-2	1912
MS #1 Arsenic		0.008	pounds/day	2 per year	See E-3	0.0002
MS#1 Iron		0.24	pounds/day	2 per year	See E-3	0.0088
MS #1 Potassium		400	pounds/day	2 per year	See E-3	30.4166
MS #1 Sodium		40.0	pounds/day	2 per year	See E-3	2.7389
MS #1 T. Phenol		0.05	pounds/day	2 per year	See E-3	0.0003
MS #1 1,1-Dichloroethane		0.13	pounds/day	2 per year	See E-3	0.0006
MS#1 1,2,4-Trichlorobenzene		0.026	pounds/day	2 per year	See E-3	0.0005
MS #1 1,2-Dichlorobenzene		0.26	pounds/day	2 per year	See E-3	0.0082
MS #1 1,3-Dichlorobenzene		0.11	pounds/day	2 per year	See E-3	0.0033
MS#1 1,4-Dichlorobenzene		0.17	pounds/day	2 per year	See E-3	0.0051
MS #1 Acetone		0.026	pounds/day	2 per year	See E-3	0.0000
MS #1 Benzene		0.15	pounds/day	2 per year	See E-3	0.0019
MS #1 Chlorobenzene		0.10	pounds/day	2 per year	See E-3	0.0039
MS #1 Cis-1,2-Dichloroethene		0.060	pounds/day	2 per year	See E-3	0.0015
MS #1 Tetrachloroethene		0.05	pounds/day	2 per year	See E-3	0.0012
MS#1 Toluene		0.03	pounds/day	2 per year	See E-3	0.0004
MS #1 Trichloroethene		0.15	pounds/day	2 per year	See E-3	0.0017
MS #1 Vinyl Chloride		0.012	pounds/day	2 per year	See E-3	0.0010
MS #1 Monochlorotoluene		0.2	pounds/day	2 per year	See E-3	0.0067

NIAGARA FALLS WATER BOARD
WASTEWATER FACILITIES
ENFORCEMENT DIVISION

SELF-MONITORING REPORT
SIGNIFICANT INDUSTRIAL USERS

PERMIT NO. 078 SEMI-ANNUAL DECEMBER 2021 – MAY 2022

INDUSTRY NAME: Cascades Containerboard Packaging, Inc. – Frontier Site

Pursuant to federal pretreatment reporting requirements and the Niagara Falls Water Board Regulations Part 1960, Significant Industrial Users shall submit periodic self-monitoring and compliance reports. Such reports shall be submitted using this form, according to the following schedule:

Quarterly	-	1st Quarter by February 28th
	-	2nd Quarter by May 31st
	-	3rd Quarter by August 31st
	-	4th Quarter by November 30th
Semi-Annual	-	by May 31st and
	-	by November 30th

Each section of this report form shall be filled out for those parameters listed in Section "E" of the company's Wastewater Discharge Permit. The analysis results must be reported in both concentration and mass. In addition, the calculated annual average load (pounds/day) for each pollutant shall also be reported.

The samples shall be collected at the monitoring points identified in the user permit. Identification of those points in this report should be as listed on page two (2) of the User Permit.

SELF-MONITORING REPORT
Significant Industrial Users (SIUs)

PAGE 2

PART II of the report is the Compliance Monitoring section. The user is obligated to determine if the analysis results indicates compliance. All violations noted should be brought to the Niagara Falls Water Board – Wastewater Facilities attention immediately upon noting and should also be reported in this section. The analysis result should be compared against all applicable federal, state and local standards and limitations. If no violations are noted then **"NO VIOLATIONS"** should appear on the report.

Pursuant to 40 CFR Part 403.12g of the Federal Standards, all violations noted must be followed up by a sample recollect/analysis and the results submitted to the Niagara Falls Water Board within thirty (30) days of first becoming aware of the violation.

Pursuant to 40 CFR Part 403.12g all Periodic Self-Monitoring Reports must be signed by a "responsible company official" certifying the following statement:

> I, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: 

Title: Consultant for Cascades Containerboard Packaging, Inc.

Date: May 25, 2022

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock A Zone Royal Avenue- West Side**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: April 5, 2022						
24-HOUR FLOW IN MGD	0.00037				0.00036	
BENZENE	8.0		<0.0001		11.4	<0.0001
MONOCHLOROBENZENE	565		0.0017		846	0.0025
1,2 – DICHLOROBENZENE	37		0.0001		54.5	0.0002
1,3 – DICHLOROBENZENE	395		0.0012		345	0.0010
1,4 – DICHLOROBENZENE	390		0.0012		598	0.0018
1,2,4 - TRICHLOROBENZENE	0		0.0000		0	0.0000
1,1 - DICHLOROETHANE	17		<0.0001		16.8	<0.0001
CIS – 1,2 - DICHLOROETHYLENE	5.4		<0.0001		7.9	<0.0001
ACETONE	0		0.0000		0	0.0000
TETRACHLOROETHYLENE	5.8		<0.0001		5.4	<0.0001
TOLUENE	4.5		<0.0001		3.9	<0.0001
TRICHLOROETHYLENE	5.7		<0.0001		6.6	<0.0001
VINYL CHLORIDE	5.8		<0.0001		5.2	0.0001
MONOCHLOROTOLUENES	178		0.0005		216	0.0006
TOTAL PHENOL	12.5		<0.0001		7.7	<0.0001
ARSENIC	9.8		<0.0001		10.3	<0.0001
IRON	221		0.0007		706	0.0021
POTASSIUM	626,000		1.9239		624,500	1.8481
SODIUM	145,500		0.4472		150,750	0.4455

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock A Zone - Royal Avenue East Side**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: April 5, 2022						
24-HOUR FLOW IN MGD	0.00059				0.00059	
BENZENE	225		0.0011		228	0.0012
MONOCHLOROBENZENE	333		0.0016		313	0.0017
1,2 - DICHLOROBENZENE	1,614		0.0079		1,437	0.0076
1,3 - DICHLOROBENZENE	382		0.0019		364	0.0020
1,4 - DICHLOROBENZENE	765		0.0038		728	0.0039
1,2,4 - TRICHLOROBENZENE	111		0.0005		102	0.0005
1,1 - DICHLOROETHANE	106		0.0005		121	0.0007
CIS – 1,2 - DICHLOROETHYLENE	260		0.0013		298	0.0016
ACETONE	0.0		0.0000		0.0	0.0000
TETRACHLOROETHYLENE	246		0.0012		220	0.0012
TOLUENE	63.5		0.0003		59.5	0.0003
TRICHLOROETHYLENE	331		0.0016		355	0.0019
VINYL CHLORIDE	65		0.0003		87.5	0.0005
MONOCHLOROTOLUENES	1,202		0.0059		1,042	0.0055
TOTAL PHENOL	34		0.0002		23.4	0.0002
ARSENIC	36.8		0.0002		28.5	0.0002
IRON	650		0.0032		2,515	0.0142
POTASSIUM	1,910,000		9.3992		1,787,250	9.4624
SODIUM	170,000		0.8366		163,125	0.8654

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock A-Zone 47th Street**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: April 5, 2022						
24-HOUR FLOW IN MGD	0.00068				0.00069	
BENZENE	140		0.0008		200	0.0012
MONOCHLOROBENZENE	95		0.0005		123	0.0007
1,2 - DICHLOROBENZENE	27		0.0002		73.5	0.0005
1,3 - DICHLOROBENZENE	34		0.0002		60.5	0.0004
1,4 - DICHLOROBENZENE	29		0.0002		55.5	0.0004
1,2,4 - TRICHLOROBENZENE	0		0.0000		0	0.0000
1,1-DICHLOROETHANE	10		< 0.0001		5.0	< 0.0001
CIS – 1,2 - DICHLOROETHYLENE	29		0.0002		84.5	0.0005
ACETONE	0		0.0000		0	0.0000
TETRACHLOROETHYLENE	0		0.0000		0	0.0000
TOLUENE	7.0		< 0.0001		3.5	< 0.0001
TRICHLOROETHYLENE	0		0.0000		0	0.0000
VINYL CHLORIDE	120		0.0007		170	0.0010
MONOCHLOROTOLUENES	33.6		0.0002		70.8	0.0004
TOTAL PHENOL	12		< 0.0001		8.7	<0.0001
ARSENIC	6.6		< 0.0001		7.9	< 0.0001
IRON	100		0.0006		105	0.0006
POTASSIUM	2,790,000		15.8385		2,640,000	15.231
SODIUM	187,000		1.0616		195,000	1.1269

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock B Zone (South)**

	RESULTS		RESULTS		ANNUAL AVERAGE	ANNUAL AVERAGE
	µg/L	/ µg/L	pounds/day	/pounds/day	µg/L	pounds/day
DATE SAMPLED: April 5, 2022						
24-HOUR FLOW IN MGD	0.000000[1]				0.000000	
BENZENE	0.0		0.0000		20.9	0.0000
MONOCHLOROBENZENE	292		0.0000		330	0.0000
1,2 - DICHLOROBENZENE	55.3		0.0000		71.2	0.0000
1,3 - DICHLOROBENZENE	85.3		0.0000		101.7	0.0000
1,4 - DICHLOROBENZENE	133		0.0000		171	0.0000
1,2,4 - TRICHLOROBENZENE	0.0		0.0000		8.7	0.0000
1,1 - DICHLOROETHANE	14.7		0.0000		18.4	0.0000
CIS - 1,2 - DICHLOROETHYLENE	0.0		0.0000		6.4	0.0000
ACETONE	0.0		0.0000		0.0	0.0000
TETRACHLOROETHYLENE	0.0		0.0000		5.7	0.0000
TOLUENE	0.0		0.0000		0.0	0.0000
TRICHLOROETHYLENE	0.0		0.0000		6.5	0.0000
VINYL CHLORIDE	0.0		0.0000		0.0	0.0000
MONOCHLOROTOLUENES	25.7		0.0000		79.9	0.0000
TOTAL PHENOL	5.1		0.0000		4.3	0.0000
						0.0000
ARSENIC	6.3		0.0000		5.7	0.0000
IRON	169		0.0000		226	0.0000
POTASSIUM	1,399,000		0.0000		1,282,000	0.0000
SODIUM	177,333		0.0000		177,167	0.0000

[1] No discharge to the south in the B-Zone for the reporting period of December 2021 through May 2022.

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock B Zone (East)**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: April 5, 2022						
24-HOUR FLOW IN MGD	0.00027				0.00027	
BENZENE	1.3		<0.0001		0.7	<0.0001
MONOCHLOROBENZENE	2.6		<0.0001		29.8	0.0001
1,2 - DICHLOROBENZENE	0.0		0.0000		32.5	0.0001
1,3 - DICHLOROBENZENE	1.6		<0.0001		15.1	<0.0001
1,4 - DICHLOROBENZENE	2.3		<0.0001		34.9	0.0001
1,2,4 - TRICHLOROBENZENE	0.0		0.0000		12.0	<0.0001
1,1 - DICHLOROETHANE	1.9		<0.0001		1.0	<0.0001
CIS – 1,2 - DICHLOROETHYLENE	7.0		<0.0001		26.8	<0.0001
ACETONE	0.0		0.0000		0.0	0.0000
TETRACHLOROETHYLENE	1.7		<0.0001		17.1	<0.0001
TOLUENE	0.0		0.0000		0.0	0.0000
TRICHLOROETHYLENE	2.5		<0.0001		18.8	<0.0001
VINYL CHLORIDE	2.4		<0.0001		21.0	<0.0001
MONOCHLOROTOLUENES	36.8		<0.0001		303	0.0006
TOTAL PHENOL	4.6		<0.0001		2.3	0.0000
ARSENIC	0.0		0.0000		0.0	0.0000
IRON	1,910		0.0044		1,768	0.0040
POTASSIUM	1,426,675		3.2551		1,370,263	3.0672
SODIUM	172,500		0.3936		210,500	0.4691

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Total Sum of Bedrock A and B Zones**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: April 5, 2022						
24-HOUR FLOW IN MGD	0.001912				0.001953	
BENZENE			0.0019			0.0024
MONOCHLOROBENZENE			0.0039			0.0049
1,2 - DICHLOROBENZENE			0.0082			0.0083
1,3 - DICHLOROBENZENE			0.0033			0.0034
1,4 - DICHLOROBENZENE			0.0051			0.0060
1,2,4 - TRICHLOROBENZENE			0.0005			0.0006
1,1 - DICHLOROETHANE			0.0006			0.0007
CIS – 1,2 - DICHLOROETHYLENE			0.0015			0.0022
ACETONE			0.0000			0.0000
TETRACHLOROETHYLENE			0.0012			0.0012
TOLUENE			0.0004			0.0004
TRICHLOROETHYLENE			0.0017			0.0020
VINYL CHLORIDE			0.0010			0.0015
MONOCHLOROTOLUENES			0.0067			0.0072
TOTAL PHENOL			0.0003			0.0002
ARSENIC			0.0002			0.0002
IRON			0.0088			0.0208
POTASSIUM			30.4166			29.6086
SODIUM			2.7389			2.9068

PART II

COMPLIANCE MONITORING

SIU NAME: Cascades Containerboard Packaging, Inc. – Frontier Site

PERMIT NO.: 078

NO VIOLATIONS

VIOLATION PARAMETER	DATE	FLOW [MGD]	SAMPLE POINT LOCATION	ACTUAL* DISCHARGE	PERMIT LIMIT	TYPE** LIMIT VIOLATED

NOTE:

* - Actual discharge – list actual analytical results and appropriate units.

** - Type Limit Violated – List Type:

A.A. = Annual Average

D.M. = Daily Maximum

L.L. = Local Limits (Regulation 1960.5)

ADMIN\WINWORD\PARADISE\SIU\SELF-MONITORING REPORT FORM - BLANK

CHAIN OF CUSTODY RECORD

COC NO.: 60331

PAGE 1 OF 1

Address: NF office

Phone: _____ **Fax:** _____

Project No/ Phase/Task Code: 11109628-07	**Laboratory Name:** Eurofins Buffalo	**Lab Location:** Amherst, NY	**SSOW ID:**
Project Name: Frontier Chemical (Cascades) GW Sampling	**Lab Contact:** Denise Heckler		**Cooler No:**
Project Location: 47th Street at Royal Ave NF			**Carrier:** Hand Delivered
GHD Chemistry Contact: Sheri Finn			**Airbill No:**
Sampler(s): D. Tyran S. Gardner			**Total # of Containers:** 57

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	SSPL Metals	Phenols	SSPL VOCs	Total Containers/sample	MS/MSD Request	Comments/ Special Instructions
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)											
1	TB-11109628-040522	4/5/22		TB	G	N			X	2		
2	WG-11109628-040522-DT-001	4/5/22	0850	WG	G	N	X	X	X	5		
3	WG-11109628-040522-SG-002	4/5/22	0855	WG	G	N	X	X	X	5		
4	WG-11109628-040522-DT-003	4/5/22	0955	WG	G	N	X	X	X	15	X	
5	WG-11109628-040522-SG-004	4/5/22	0855	WG	G	N	X	X	X	5		
6	WG-11109628-040522-DT-005	4/5/22	1125	WG	G	N	X	X	X	5		
7	WG-11109628-040522-SG-006	4/5/22	1105	WG	G	N	X	X	X	5		
8	WG-11109628-040522-DT-007	4/5/22	1205	WG	G	N	X	X	X	5		
9	WG-11109628-040522-SG-008	4/5/22	1245	WG	G	N	X	X	X	5		
10	WG-11109628-040522-DT-009	4/5/22	1300	WG	G	N	X	X	X	5		
11												
12												

480-196414 Chain of Custody

DJT

TAT Required in business days (use separate COCs for different TATs):

☐ ☐ 1 Day ☑ 2 Days ☐ 3 Days ☐ 1 Week ☑ 2 Week

Notes/ Special Requirements: Temp 4.8 # 1 ICE

	Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1.	Dave Tyran	GHD	4/5/22	1320	1. [signature]	TAB	4/5/22	15:20
2.					2.			
3.					3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

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4/14/2022

2055 Niagara Falls Boulevard
Niagara Falls, NY 14304
USA
www.ghd.com

Our ref: 12595539

29 November 2022

Mr. Joel Paradise
Niagara Falls Water Board
5815 Buffalo Avenue
Niagara Falls, NY 14304

Semiannual Groundwater Discharge Report SIU Permit #78 Cascades Containerboard Packaging, Inc. (Former Frontier Chemical Site)

Dear Mr. Paradise:

This semiannual report has been prepared in accordance with Paragraph F of the Significant Industrial User Permit #78 effective on October 2, 2020 by the Niagara Falls Water Board to Cascades Containerboard Packaging, Inc. (formerly Norampac Industries, Inc. and formerly Frontier Chemical Site PRP Group) in Niagara Falls, New York (Site). The report presents the analytical data and field measurements taken for the semiannual period covering June 2022 through November 2022. The data collected have been used to calculate the volume of groundwater and the chemical loading associated with the groundwater that discharges into the Falls Street Tunnel (FST) and the 47th Street Tunnel, which are located immediately adjacent to the former Frontier Chemical Site.

1. Data Collection

Groundwater levels were measured in all of the available monitoring wells in the A Zone and B Zone of the bedrock formation at the Site. The groundwater levels were measured on October 3, 2022, and the data are presented on attached Figures 1 and 2.

Groundwater samples were collected from the following monitoring wells on October 4, 5, and 6, 2022, and analyzed for the list of parameters specified in Paragraphs E and F of the Permit.

A Zone

- MW01-9A
- MW88-13A
- BH87-28
- BH-87-3A

B Zone

- BH87-3B
- MW-9
- MW-12
- MW-13

2. Flow Calculation

The groundwater flow volume is calculated based upon the thickness of the bedrock aquifer through which the groundwater flows, the aquifer permeability, and the gradient (slope) of the groundwater table. These three factors are combined, using Darcy's Law of hydraulic flow, to determine the flow volume (Flow = permeability x gradient x cross sectional saturated area). The groundwater gradients used in the flow calculation are presented on Figures 1 and 2. The calculation of groundwater flow is presented in Table 1. The Bedrock A Zone migration boundary along the south side of the Site has been divided into the west side and the east side. The October 2022 groundwater levels show that a portion of the A Zone groundwater discharge from the western half of the Site continues to discharge towards Royal Avenue. The most likely receiver of the A Zone groundwater in this area is the underlying B Zone, which is captured by the 47th Street Tunnel.

The calculated volume of groundwater discharge to the tunnels from the entire Site for the June 2022 through November 2022 time period is 1,503 gallons per day.

It is noted that the groundwater in the B Zone continues to flow to the east toward 47th Street with no migration to the south. This flow pattern is consistent with the pattern that developed after the closure of a portion of the FST and was first measured during the October 19, 2012 groundwater monitoring event.

3. Loading Calculation

The chemical loading to the tunnel sewer system is determined by multiplying groundwater flow volume by the concentration of the chemicals in the groundwater at the downgradient boundary of the Site, adjacent to where the groundwater enters the tunnels. Since there are multiple wells available along the tunnels, the chemical concentrations of this group of wells have been averaged to provide the best estimate of chemical loading. The concentrations of chemicals present in the October 2022 groundwater samples and the calculated chemical loadings to the tunnel sewers for each individual compound for each flow zone are presented in Tables 2a, 2b, 2c, 3a, and 3b. The total daily chemical loading for each compound is summarized in Table 4.

4. Discharge Limitations

The calculated volume of groundwater discharge to the tunnels and the associated chemical loadings have been compared to the limitations of the Permit (see Table 5). The calculations show that all parameters are within the Permit limits.

It is noted that, while it is expected that the chemical loadings will decrease over time, some variability should be expected in the groundwater hydraulics and concentrations used to calculate the infiltration conditions, therefore, some flexibility is needed in the Permit limits for the Site. It is believed that the Permit limits are reasonable, given the current conditions and making allowance for some continued variation over time. However, if conditions change, modifications may be necessary.

5. Next Report

The next semiannual report will be submitted to the Niagara Falls Water Board by May 31, 2023.

Should you have any questions, please contact me.

Regards,

Shaun McEvoy
Engineer

+1 716 205-1975
shaun.mcevoy@ghd.com

Attachments

Copy to: Dr. Abderrahman Zehraoui, Niagara Falls Water Board
Doug Williamson, Niagara Falls Water Board
Douglas Hormson, Greenpac Mill, LLC
Jennifer Booker, Greenpac Mill, LLC
Derek Claus, Greenpac Mill, LLC

REPUTED OWNER
CASCADES CONTAINERBOARD PACKAGING, INC.

MW88-4A
(556.05)

MW-14
(556.68)

MW88-1A
(NM)

MW90-1A
(556.92)

h_3

MW-17
(Destroyed 2015)

MW88-14A

MW88-8A
(554.08)

MW88-10A
(557.06)

REPUTED OWNER
CASCADES CONTAINERBOARD PACKAGING, INC.
L-3118, P-293

MW88-12A
(554.46)

MW-15
(Destroyed 2020)

MW88-7A

MW88-2A

BH87-2A
(555.79)

h_1

BH87-5A*
(569.08)

$i_2 = \frac{h_3 - h_4}{L_2}$

MW88-3A

MW-2
(NM)

REPUTED OWNER
GREEN PAC MILL
L-2362, P-255

$i_1 = \frac{h_1 - h_2}{L_1}$

MW88-9A
(Well Damaged)

47TH STREET
TUNNEL

h_2

MW01-9A
(555.72)

MW88-6A

BH87-3A
(555.98)

MW88-13A
(553.76)

BH87-28
(550.70)

ROYAL AVENUE

REPUTED OWNER
PRAXAIR

LEGEND

● MW88-12A	A-ZONE MONITORING WELL LOCATION
✱ MW88-2A	WELL DECOMMISSIONED DURING 2013 SOIL REMEDIATION
(556.68)	GROUNDWATER ELEVATION (ft. AMSL)
(NM)	NOT MEASURED
*	ANOMALOUS VALUE, NOT USED IN CONTOURING
555	GROUNDWATER CONTOUR (ft. AMSL)
	GROUNDWATER FLOW DIRECTION

0 50 100 ft
1" = 100 ft

N

GHD

CASCADES CONTAINERBOARD PACKAGING,
NIAGARA FALLS DIVISION
NIAGARA FALLS, NEW YORK

GROUNDWATER CONTOURS - ZONE A
OCTOBER 2022

Project No. 12595539
Date November 2022

FIGURE 1

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Plot Date: 09 November 2022 4:24 PM

REPUTED OWNER
CASCADES CONTAINERBOARD PACKAGING, INC.

MW88-4B (554.20)
MW90-1B (548.92)
MW88-1B (NM)
MW-13 (543.60)
MW88-14B
MW88-8B (545.57)
MW88-10B (557.05)
MW88-12B (548.56)
BH87-2B (551.85)
MW88-2B
MW88-7BR
BH87-5C (NM)
MW88-3B
MW88-5B
MW88-9B (548.06)
MW-9 (554.27)
MW88-6B
MW-11
MW-12 (546.59)
BH87-3B (555.73)

$i_3 = \frac{h_5 - h_6}{L_3}$

h_5 h_6

REPUTED OWNER
CASCADES CONTAINERBOARD PACKAGING, INC.
L-3118, P-293

REPUTED OWNER
GREEN PAC MILL
L-2362, P-255

REPUTED OWNER
PRAXAIR

47TH STREET TUNNEL

ROYAL AVENUE

LEGEND

MW88-12B	B-ZONE MONITORING WELL LOCATION
MW88-2B	WELL DECOMMISIONED DURING 2013 SOIL REMEDIATION
(548.92)	GROUNDWATER ELEVATION (ft. AMSL)
(NM)	NOT MEASURED
550	GROUNDWATER CONTOUR (ft. AMSL)
	GROUNDWATER FLOW DIRECTION

0 50 100 ft
1" = 100 ft

N

GHD

CASCADES CONTAINERBOARD PACKAGING,
NIAGARA FALLS DIVISION
NIAGARA FALLS, NEW YORK

GROUNDWATER CONTOURS - ZONE B
OCTOBER 2022

Project No. 12595539
Date November 2022

FIGURE 2

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Plot Date: 09 November 2022 3:26 PM

Table 1

Fall 2022
Groundwater Flow Rate Estimate
Cascades Containerboard Packaging, Inc. - Former Frontier Chemical Site
Niagara Falls, New York

A) Bedrock A-Zone (Figure 1)

Royal Avenue West Side
Flow Thickness: Upper 3 to 5 feet of bedrock
Head Difference: = h1-h2
= 0.57 ft

Distance between h1 & h2 = 280 ft

i = 0.57/280 = 0.002

Flow Width: 350 ft
K = 2.5×10^{-5} to 5.2×10^{-5} ft/sec
Flow rate: = 5ft x 0.002 x 350 ft x 5.2×10^{-5} ft/sec
= 1.82×10^{-4} ft^3/sec
= 117.62 USgal/day
= 42,932 USgal/year

Royal Avenue East Side
Flow Thickness: Upper 3 to 5 feet of bedrock
Head Difference: = h3-h4
= 6.22 ft

Distance between h3 & h4 = 740 ft

i = 6.22/740 = 0.0084

Flow Width: 390 ft
K = 2.5×10^{-5} to 5.2×10^{-5} ft/sec
Flow rate: = 5ft x 0.0084 x 390 ft x 5.2×10^{-5} ft/sec
= 8.52×10^{-4} ft^3/sec
= 550.82 USgal/day
= 201,050 USgal/year

47th Street South Side
Flow Thickness: Upper 3 to 5 feet of bedrock
Head Difference: = h3-h4
= 6.22 ft

Distance between h_3 & h_4 = 740 ft

i = 6.22/740 = 0.0084

Flow Width: 400 ft
K = 2.5×10^{-5} to 5.2×10^{-5} ft/sec
Flow rate: = 5ft x 0.0084 x 400 ft x 5.2×10^{-5} ft/sec
= 8.74×10^{-4} ft^3/sec
= 564.9 USgal/day
= 206,205 USgal/year

Note:

See Figure 1 for locations of h_1, h_2, h_3 and h_4.

Fall 2022
Groundwater Flow Rate Estimate
Cascades Containerboard Packaging, Inc. - Former Frontier Chemical Site
Niagara Falls, New York

B) Bedrock B-Zone (Figure 2)

Flow Thickness: 2-foot-thick fracture zone from 8 to 10 feet beneath A-Zone
Flow from B-Zone discharges to the east

• Easterly Flow:

Head Difference: = h_5-h_6 = 11.05 feet
Distance between h_5 & h_6 = 490 ft
Gradient (i): = 0.023
Flow Width: = 660 ft
Hydraulic Conductivity: = 1.4 x 10^{-5} ft/sec
Flow rate: = 2ft x 0.022 x 660 ft x 1.4 x 10^{-5} ft/sec
= 4.17 x 10^{-4} ft^3/sec
= 269.3 USgal/day
= 98,305 USgal/year

Note:

See Figure 2 for locations of h_5 and h_6.

Table 2A

A-Fracture Zone Bedrock, Royal Avenue West Side Discharge
October 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells MW-01-9A 10/4/2022	Adjacent Wells BH87-3A 10/5/2022	Average Concentration (µg/L) Adjacent Wells	Mass Flux (pounds/day) Adjacent Wells
VOCs by Method OLM04.2 (µg/L)				
1,1-Dichloroethane	**27 J**	50 U	16.0	0.000016
1,2,4-Trichlorobenzene	50 U	50 U	0.0	0.000000
1,2-Dichlorobenzene	**36 J**	**170**	103.0	0.000101
1,3-Dichlorobenzene	**140**	**530**	335.0	0.000329
1,4-Dichlorobenzene	**200**	**1700**	950.0	0.000932
Acetone	250 U	250 U	0.0	0.000000
Benzene	50 U	**35 J**	20.0	0.000020
Chlorobenzene	**310**	**2800**	1125.0	0.001104
cis-1,2-Dichloroethene	**8.6 J**	**20 J**	14.3	0.000014
Tetrachloroethene	50 U	50 U	0.0	0.000000
Toluene	50 U	50 U	0.0	0.000000
Trichloroethene	50 U	**9.5 J**	7.3	0.000007
Vinyl chloride	**8.8 J**	**13 J**	10.9	0.000011
Monochlorotoluene	**221**	**253**	237.0	0.000233
SVOCs by Method OLM04.2 (µg/L)				
Phenol	10 U	10 U	0.0	0.000000
TAL Metals by Method ILM04.0 (µg/L)				
Arsenic	**15**	15 U	8.3	0.000008
Iron	**800**	**990**	895.0	0.000878
Potassium	**906,000**	**103000**	504500.0	0.494936
Sodium	**169,000**	**76200**	122600.0	0.120276

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration

(2) For U values where compound was not detected in any listed wells, the average concentration was set to 0 µg/L

(3) Flow rate = 117.6 US gallons/day

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

TAL - Target Analyte List

J - Estimated concertation

Table 2B

A-Fracture Zone Bedrock, Royal Avenue East Side Discharge
October 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells			Average Concentration (µg/L)	Mass Flux (pounds/day)
	BH87-28 10/6/2022	MW-88-6A	MW-88-13A 10/4/2022	Adjacent Wells	Adjacent Wells
VOCs by Method OLM04.2 (µg/L)					
1,1-Dichloroethane	**15 J**	**NS**	**200**	107.5	0.0005
1,2,4-Trichlorobenzene	50 U	**NS**	**170**	87.5	0.0004
1,2-Dichlorobenzene	**30 J**	**NS**	**2100**	1065.0	0.0049
1,3-Dichlorobenzene	**47 J**	**NS**	**540**	293.5	0.0013
1,4-Dichlorobenzene	**42 J**	**NS**	**1200**	621.0	0.0029
Acetone	250 U	**NS**	250 U	0.0	0.0000
Benzene	**200**	**NS**	**190**	195.0	0.0009
Chlorobenzene	**130**	**NS**	**420**	275.0	0.0013
cis-1,2-Dichloroethene	**120**	**NS**	**690**	405.0	0.0019
Tetrachloroethene	50 U	**NS**	**260**	132.5	0.0006
Toluene	**14 J**	**NS**	**83**	48.5	0.0002
Trichloroethene	50 U	**NS**	**460**	232.5	0.0011
Vinyl chloride	**240**	**NS**	**31 J**	135.5	0.0006
Monochlorotoluene	**50.1 J**	**NS**	**1835**	942.6	0.0043
SVOCs by Method OLM04.2 (µg/L)					
Phenol	**14**	**NS**	**30**	22.0	0.0001
TAL Metals by Method ILM04.0 (µg/L)					
Arsenic	**12 J**	**NS**	**51**	31.5	0.0001
Iron	**150**	**NS**	**4800**	2475.0	0.0114
Potassium	**3240000**	**NS**	**886000**	2063000.0	9.4792
Sodium	**226000**	**NS**	**167000**	196500.0	0.9029

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration
(2) For U values where compound was not detected in any listed wells, the average concentration was set to 0 µg/L
(3) Flow rate = 550.8 US gallons/day
NS - Not samplable (Abandoned)
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
J - Estimated concentration

Table 2C

A-Fracture Zone Bedrock, 47th Street Discharge
October 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

	Adjacent Wells		Average Concentration (µg/L)	Mass Flux (pounds/day)
Analyte	**BH87-28 10/6/2022**	**BH87-5C**	**Adjacent Wells**	**Adjacent Wells**
VOCs by Method OLM04.2 (µg/L)				
1,1-Dichloroethane	**15 J**	NS	15.0	0.000071
1,2,4-Trichlorobenzene	50 U	NS	0.0	0.000000
1,2-Dichlorobenzene	**30 J**	NS	30.0	0.000141
1,3-Dichlorobenzene	**47 J**	NS	47.0	0.000221
1,4-Dichlorobenzene	**42 J**	NS	42.0	0.000198
Acetone	250 U	NS	0.0	0.000000
Benzene	**200**	NS	200.0	0.000943
Chlorobenzene	**130**	NS	130.0	0.000613
cis-1,2-Dichloroethene	**120**	NS	120.0	0.000566
Tetrachloroethene	50 U	NS	0.0	0.000000
Toluene	**14 J**	NS	14.0	0.000066
Trichloroethene	50 U	NS	0.0	0.000000
Vinyl chloride	**240**	NS	240.0	0.001131
Monochlorotoluene	**50.1**	NS	50.1	0.000236
SVOCs by Method OLM04.2 (µg/L)				
Phenol	**14**	NS	14.0	0.000066
TAL Metals by Method ILM04.0 (µg/L)				
Arsenic	**12 J**	NS	12.0	0.000057
Iron	**150**	NS	150.0	0.000707
Potassium	**3240000**	NS	3240000.0	15.268528
Sodium	**226000**	NS	226000.0	1.065027

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration
(2) For U values where compound was not detected in any listed wells, the average concentration was set to 0 µg/L
(3) Flow rate = 564.9 US gallons/day
NS - Well not sampleable
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
J - Estimated concentration

Table 3A

B-Fracture Zone Bedrock - Southerly Discharge
October 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells					Average Concentration (µg/L) Southerly Discharge	Mass Flux (pounds/day) Adjacent Wells
	MW-9 10/4/2022	MW-11	MW-12 10/6/2022	BH87-3B 10/4/2022	MW-88-6B		
VOCs by Method OLM04.2 (µg/L)							
1,1-Dichloroethane	**31 J**	**NS**	50 U	50 U / 50 U	**NS**	13.7	0.0000
1,2,4-Trichlorobenzene	**4.3 J**	**NS**	50 U	50 U / 50 U	**NS**	4.8	0.0000
1,2-Dichlorobenzene	**30 J**	**NS**	50 U	**96 / 90**	**NS**	42.7	0.0000
1,3-Dichlorobenzene	**85**	**NS**	50 U	**210 / 190**	**NS**	96.7	0.0000
1,4-Dichlorobenzene	**250**	**NS**	50 U	**340 / 320**	**NS**	195.0	0.0000
Acetone	250 U	**NS**	250 U	250 U / 250 U	**NS**	0.0	0.0000
Benzene	**77**	**NS**	**6.5 J**	**11 J / 11 J**	**NS**	31.5	0.0000
Chlorobenzene	**390**	**NS**	**6.9 J**	**780 / 740**	**NS**	385.6	0.0000
cis-1,2-Dichloroethene	50 U	**NS**	50 U	**13 J / 12 J**	**NS**	7.5	0.0000
Tetrachloroethene	50 U	**NS**	**58**	50 U **/ 6.9 J**	**NS**	23.0	0.0000
Toluene	50 U	**NS**	50 U	50 U / 50 U	**NS**	0.0	0.0000
Trichloroethene	50 U	**NS**	**25 J**	**9.5 J / 11 J**	**NS**	13.4	0.0000
Vinyl chloride	50 U	**NS**	50 U	**13 J /** 50 U	**NS**	6.3	0.0000
Monochlorotoluene	**311**	**NS**	50 U	**50.3 J / 48.9 J**	**NS**	136.9	0.0000
SVOCs by Method OLM04.2 (µg/L)							
Phenol	**7.4 J**	**NS**	**4.7 J**	10 U / 10 U	**NS**	4.4	0.0000
TAL Metals by Method ILM04.0 (µg/L)							
Arsenic	**12 J**	**NS**	**6.1 J**	**6.5 J /** 15 U	**NS**	7.4	0.0000
Iron	**190**	**NS**	**150**	**370 / 370**	**NS**	236.7	0.0000
Potassium	**701000**	**NS**	**2400000**	**156000 / 157000**	**NS**	1085833.3	0.0000
Sodium	**179000**	**NS**	**201000**	**85800 / 86000**	**NS**	155300.0	0.0000

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration
(2) For U values where compound was not detected in any listed well, the average concentration was set to 0 µg/L
(3) Flow rate = 0 US gallons/day
NS - Not sampleable (Abandoned)
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
J - Estimated concentration

Table 3B

B-Fracture Zone Bedrock - Easterly Discharge
October 2022 Chemical Flux
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Adjacent Wells			Average Concentration (µg/L)	Mass Flux (pounds/day)
	MW-12 10/6/2022	MW-13 10/6/2022	BH87-5A	Easterly Discharge	Adjacent Wells
VOCs by Method OLM04.2 (µg/L)					
1,1-Dichloroethane	50 U	10 U	NS	0.0	0
1,2,4-Trichlorobenzene	50 U	10 U	NS	0.0	0
1,2-Dichlorobenzene	50 U	10 U	NS	0.0	0
1,3-Dichlorobenzene	50 U	10 U	NS	0.0	0
1,4-Dichlorobenzene	50 U	**3.2 J**	NS	4.1	9.21087E-06
Acetone	250 U	50 U	NS	0.0	0
Benzene	**6.5 J**	10 U	NS	3.8	8.42458E-06
Chlorobenzene	**6.9 J**	**3.1 J**	NS	5.0	1.12328E-05
cis-1,2-Dichloroethene	50 U	**19**	NS	12.0	2.69587E-05
Tetrachloroethene	**58**	10 U	NS	29.5	6.62734E-05
Toluene	50 U	10 U	NS	0.0	0
Trichloroethene	**25 J**	10 U	NS	13.0	2.92052E-05
Vinyl chloride	50 U	**5 J**	NS	5.0	1.12328E-05
Monochlorotoluene	50 U	**86**	NS	45.5	0.000102218
SVOCs by Method OLM04.2 (µg/L)					
Phenol	**4.7 J**	10 U	NS	2.9	6.40268E-06
TAL Metals by Method ILM04.0 (µg/L)					
Arsenic	**6.1 J**	15 U	NS	3.8	8.53691E-06
Iron	**150**	**410**	NS	280.0	0.000629035
Potassium	**2400000**	**27300**	NS	1213650.0	2.72653082
Sodium	**201000**	**135000**	NS	168000.0	0.377421149

Notes:

(1) For U Values where compound was detected in one or more of the listed wells, 10 percent of U value was used to calculate average concentration
(2) For U values where compound was not detected in any listed well, the average concentration was set to 0 µg/L
(3) Flow rate = 269.3 US gallons/day
NS - Not samplable (Abandoned)
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
J - Estimated concentration

Table 4

Total Chemical Flux
October 2022
Cascades Containerboard Packaging, Inc. - Frontier Site
Niagara Falls, New York

Analyte	Zone A Royal Ave West Side Mass Flux Adjacent Wells (pounds/day)	Zone A Royal Avenue East Side Mass Flux Adjacent Wells (pounds/day)	Zone A 47th Street Mass Flux Adjacent Wells (pounds/day)	Zone B Easterly Flow Mass Flux Adjacent Wells (pounds/day)	Total (pounds/day)
VOCs by Method OLM04.2 (µg/L)					
1,1-Dichloroethane	< 0.0001	0.0005	< 0.0001	0.0000	0.0006
1,2,4-Trichlorobenzene	0.0000	0.0004	0.0000	0.0000	0.0004
1,2-Dichlorobenzene	0.0001	0.0049	0.0001	0.0000	0.0051
1,3-Dichlorobenzene	0.0003	0.0013	0.0002	0.0000	0.0019
1,4-Dichlorobenzene	0.0009	0.0029	0.0002	< 0.0001	0.0040
Acetone	0.0000	0.0000	0.0000	0.0000	0.0000
Benzene	< 0.0001	0.0009	0.0009	< 0.0001	0.0019
Chlorobenzene	0.0011	0.0013	0.0006	< 0.0001	0.0030
cis-1,2-Dichloroethene	< 0.0001	0.0019	0.0006	< 0.0001	0.0025
Tetrachloroethene	0.000000	0.0006	0.0000	< 0.0001	0.0007
Toluene	0.000000	0.0002	< 0.0001	0.0000	0.0003
Trichloroethene	< 0.0001	0.0011	0.0000	< 0.0001	0.0011
Vinyl chloride	< 0.0001	0.0006	0.0011	< 0.0001	0.0018
Monochlorotoluene	0.0002	0.0043	0.0002	0.0001	0.0049
Total VOCs	0.0028	0.0209	0.0042	0.0003	0.0281
SVOCs by Method OLM04.2 (µg/L)					
Phenol	0.0000	0.0001	< 0.0001	< 0.0001	0.0002
TAL Metals by Method ILM04.0 (µg/L)					
Arsenic	< 0.0001	0.0001	< 0.0001	< 0.0001	0.0002
Iron	0.000878	0.0114	0.0007	0.0006	0.0136
Potassium	0.494936	9.4792	15.2685	2.7265	27.9692
Sodium	0.120276	0.9029	1.0650	0.3774	2.4656

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List

Table 5

Comparisons of Loading to Interim Discharge Limitations
Cascades Containerboard Packaging, Inc. - Frontier Site – October 2022
Niagara Falls, New York

Outfall Number Effluent Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements		Calculated Daily Discharge November 2022 pounds/day Except as noted (gallons/day)
	Annual Average	Daily Maximum		Measurement Frequency	Sample Type	
MS #1 Flow		4000	gallons/day	2 per year	See E-2	1,503
MS #1 Arsenic		0.008	pounds/day	2 per year	See E-3	0.0002
MS#1 Iron		0.24	pounds/day	2 per year	See E-3	0.0136
MS #1 Potassium		400	pounds/day	2 per year	See E-3	27.962
MS #1 Sodium		40.0	pounds/day	2 per year	See E-3	2.4656
MS #1 T. Phenol		0.05	pounds/day	2 per year	See E-3	0.0002
MS #1 1,1-Dichloroethane		0.13	pounds/day	2 per year	See E-3	0.0006
MS#1 1,2,4-Trichlorobenzene		0.026	pounds/day	2 per year	See E-3	0.0004
MS #1 1,2-Dichlorobenzene		0.26	pounds/day	2 per year	See E-3	0.0051
MS #1 1,3-Dichlorobenzene		0.11	pounds/day	2 per year	See E-3	0.0019
MS#1 1,4-Dichlorobenzene		0.17	pounds/day	2 per year	See E-3	0.0040
MS #1 Acetone		0.026	pounds/day	2 per year	See E-3	0.0000
MS #1 Benzene		0.15	pounds/day	2 per year	See E-3	0.0019
MS #1 Chlorobenzene		0.10	pounds/day	2 per year	See E-3	0.0030
MS #1 Cis-1,2-Dichloroethene		0.060	pounds/day	2 per year	See E-3	0.0025
MS #1 Tetrachloroethene		0.05	pounds/day	2 per year	See E-3	0.0007
MS#1 Toluene		0.03	pounds/day	2 per year	See E-3	0.0003
MS #1 Trichloroethene		0.15	pounds/day	2 per year	See E-3	0.0011
MS #1 Vinyl Chloride		0.012	pounds/day	2 per year	See E-3	0.0018
MS #1 Monochlorotoluene		0.2	pounds/day	2 per year	See E-3	0.0049

NIAGARA FALLS WATER BOARD
WASTEWATER FACILITIES
ENFORCEMENT DIVISION

SELF-MONITORING REPORT
SIGNIFICANT INDUSTRIAL USERS

PERMIT NO. 078 SEMI-ANNUAL JUNE 2022 – NOVEMBER 2022

INDUSTRY NAME: Cascades Containerboard Packaging, Inc. – Frontier Site

Pursuant to federal pretreatment reporting requirements and the Niagara Falls Water Board Regulations Part 1960, Significant Industrial Users shall submit periodic self-monitoring and compliance reports. Such reports shall be submitted using this form, according to the following schedule:

Quarterly	-	1st Quarter by February 28th
	-	2nd Quarter by May 31st
	-	3rd Quarter by August 31st
	-	4th Quarter by November 30th
Semi-Annual	-	by May 31st
		and
	-	by November 30th

Each section of this report form shall be filled out for those parameters listed in Section “E” of the company’s Wastewater Discharge Permit. The analysis results must be reported in both concentration and mass. In addition, the calculated annual average load (pounds/day) for each pollutant shall also be reported.

The samples shall be collected at the monitoring points identified in the user permit. Identification of those points in this report should be as listed on page two (2) of the User Permit.

SELF-MONITORING REPORT
Significant Industrial Users (SIUs)

PAGE 2

PART II of the report is the Compliance Monitoring section. The user is obligated to determine if the analysis results indicates compliance. All violations noted should be brought to the Niagara Falls Water Board – Wastewater Facilities attention immediately upon noting and should also be reported in this section. The analysis result should be compared against all applicable federal, state and local standards and limitations. If no violations are noted then **"NO VIOLATIONS"** should appear on the report.

Pursuant to 40 CFR Part 403.12g of the Federal Standards, all violations noted must be followed up by a sample recollect/analysis and the results submitted to the Niagara Falls Water Board within thirty (30) days of first becoming aware of the violation.

Pursuant to 40 CFR Part 403.12g all Periodic Self-Monitoring Reports must be signed by a "responsible company official" certifying the following statement:

> I, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: 

Title: Consultant for Cascades Containerboard Packaging, Inc.

Date: November 29, 2022

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock A Zone Royal Avenue- West Side**

	RESULTS		RESULTS		ANNUAL AVERAGE	ANNUAL AVERAGE
	µg/L	/ µg/L	pounds/day	/pounds/day	µg/L	pounds/day
DATE SAMPLED: October 4-5, 2022						
24-HOUR FLOW IN MGD	0.00012				0.00025	
BENZENE	20.0		<0.0001		14	<0.0001
MONOCHLOROBENZENE	1125		0.0011		845	0.0014
1,2 – DICHLOROBENZENE	103		0.0001		70	0.0001
1,3 – DICHLOROBENZENE	335		0.0003		365	0.0008
1,4 – DICHLOROBENZENE	950		0.0009		670	0.0011
1,2,4 - TRICHLOROBENZENE	0		0.0000		0	0.0000
1,1 - DICHLOROETHANE	16		<0.0001		16.5	<0.0001
CIS – 1,2 - DICHLOROETHYLENE	14.3		<0.0001		9.9	<0.0001
ACETONE	0.0		0.0000		0	0.0000
TETRACHLOROETHYLENE	0.0		0.0000		2.9	<0.0001
TOLUENE	0.0		0.0000		2.3	<0.0001
TRICHLOROETHYLENE	7.3		<0.0001		6.5	<0.0001
VINYL CHLORIDE	10.9		<0.0001		8.4	0.0001
MONOCHLOROTOLUENES	237		0.0002		208	0.0004
TOTAL PHENOL	0.0		0.0000		6.3	<0.0001
ARSENIC	8.3		<0.0001		9.1	<0.0001
IRON	895		0.0009		558	0.0008
POTASSIUM	504,500		0.4949		565,000	1.2094
SODIUM	122,600		0.1203		134050	0.2838

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock A Zone - Royal Avenue East Side**

	RESULTS µg/L / µg/L		RESULTS pounds/day/pounds/day		ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: October 4 and 6, 2022						
24-HOUR FLOW IN MGD	0.00055				0.00057	
BENZENE	195		0.0009		210	0.0010
MONOCHLOROBENZENE	275		0.0013		304	0.0015
1,2 - DICHLOROBENZENE	1,065		0.0049		1,340	0.0064
1,3 - DICHLOROBENZENE	294		0.0013		338	0.0016
1,4 - DICHLOROBENZENE	621		0.0029		693	0.0034
1,2,4 - TRICHLOROBENZENE	87.5		0.0004		99.2	0.0005
1,1 - DICHLOROETHANE	108		0.0005		107	0.0005
CIS – 1,2 - DICHLOROETHYLENE	405		0.0019		333	0.0016
ACETONE	0.0		0.0000		0.0	0.0000
TETRACHLOROETHYLENE	133		0.0006		190	0.0009
TOLUENE	48.5		0.0002		56	0.0003
TRICHLOROETHYLENE	233		0.0011		282	0.0014
VINYL CHLORIDE	136		0.0006		101	0.0005
MONOCHLOROTOLUENES	943		0.0043		1,073	0.0051
TOTAL PHENOL	22		0.0001		28	0.0002
ARSENIC	31.5		0.0001		34.2	0.0002
IRON	2475		0.0114		1,563	0.0073
POTASSIUM	2,063,000		9.4792		1,986,500	9.4392
SODIUM	196,500		0.9029		183,250	0.8698

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock A-Zone 47th Street**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: October 6, 2022						
24-HOUR FLOW IN MGD	0.00056				0.00062	
BENZENE	200		0.0009		170	0.0009
MONOCHLOROBENZENE	130		0.0006		113	0.0006
1,2 - DICHLOROBENZENE	30		0.0001		28.5	0.0002
1,3 - DICHLOROBENZENE	47		0.0002		40.5	0.0002
1,4 - DICHLOROBENZENE	42		0.0002		35.5	0.0002
1,2,4 - TRICHLOROBENZENE	0		0.0000		0	0.0000
1,1-DICHLOROETHANE	15		< 0.0001		12.5	< 0.0001
CIS – 1,2 - DICHLOROETHYLENE	120		0.0006		74.5	0.0004
ACETONE	0		0.0000		0	0.0000
TETRACHLOROETHYLENE	0		0.0000		0	0.0000
TOLUENE	14		< 0.0001		10.5	< 0.0001
TRICHLOROETHYLENE	0		0.0000		0	0.0000
VINYL CHLORIDE	240		0.0011		180	0.0009
MONOCHLOROTOLUENES	50.1		0.0002		41.9	0.0002
TOTAL PHENOL	14		< 0.0001		13	<0.0001
ARSENIC	12		< 0.0001		9.3	< 0.0001
IRON	150		0.0007		125	0.0007
POTASSIUM	3,240,000		15.2685		3,015,000	15.5535
SODIUM	226,000		1.0650		206,500	1.0633

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock B Zone (South)**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: October 4 and 6, 2022						
24-HOUR FLOW IN MGD	0.000000[1]				0.000000	
BENZENE	31.5		0.0000		15.8	0.0000
MONOCHLOROBENZENE	386		0.0000		339	0.0000
1,2 - DICHLOROBENZENE	42.7		0.0000		49	0.0000
1,3 - DICHLOROBENZENE	96.7		0.0000		91	0.0000
1,4 - DICHLOROBENZENE	195		0.0000		164	0.0000
1,2,4 - TRICHLOROBENZENE	4.8		0.0000		2.4	0.0000
1,1 - DICHLOROETHANE	13.7		0.0000		14.2	0.0000
CIS - 1,2 - DICHLOROETHYLENE	7.5		0.0000		3.8	0.0000
ACETONE	0.0		0.0000		0.0	0.0000
TETRACHLOROETHYLENE	23		0.0000		11.5	0.0000
TOLUENE	0.0		0.0000		0.0	0.0000
TRICHLOROETHYLENE	13.4		0.0000		6.7	0.0000
VINYL CHLORIDE	6.3		0.0000		3.2	0.0000
MONOCHLOROTOLUENES	137		0.0000		81.4	0.0000
TOTAL PHENOL	4.4		0.0000		4.8	0.0000
						0.0000
ARSENIC	7.4		0.0000		6.9	0.0000
IRON	237		0.0000		203	0.0000
POTASSIUM	1,085,833		0.0000		1,242,417	0.0000
SODIUM	155,300		0.0000		166,317	0.0000

[1] No discharge to the south in the B-Zone for the reporting period of June 2022 through November 2022.

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Monitoring Wells in Bedrock B Zone (East)**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: October 6, 2022						
24-HOUR FLOW IN MGD	0.00027				0.00027	
BENZENE	3.8		<0.0001		2.6	<0.0001
MONOCHLOROBENZENE	5.0		<0.0001		3.8	<0.0001
1,2 - DICHLOROBENZENE	0.0		0.0000		0.0	0.0000
1,3 - DICHLOROBENZENE	0.0		0.0000		0.8	<0.0001
1,4 - DICHLOROBENZENE	4.1		<0.0001		3.3	<0.0001
1,2,4 - TRICHLOROBENZENE	0.0		0.0000		0.0	0.0000
1,1 - DICHLOROETHANE	0.0		0.0000		1.0	<0.0001
CIS – 1,2 - DICHLOROETHYLENE	12		<0.0001		9.5	<0.0001
ACETONE	0.0		0.0000		0.0	0.0000
TETRACHLOROETHYLENE	29.5		<0.0001		15.6	<0.0001
TOLUENE	0.0		0.0000		0.0	0.0000
TRICHLOROETHYLENE	13		<0.0001		7.8	<0.0001
VINYL CHLORIDE	5.0		<0.0001		3.7	<0.0001
MONOCHLOROTOLUENES	45.5		0.0001		41.2	0.0001
TOTAL PHENOL	2.9		<0.0001		3.8	<0.0001
ARSENIC	3.8		0.0000		1.9	<0.0001
IRON	280		0.0006		1,095	0.0025
POTASSIUM	1,213,650		2.7265		1,320,163	2.9908
SODIUM	168,000		0.3774		170,250	0.3855

PART I

ANALYTICAL RESULTS

SIU PERMIT NAME: **Cascades Containerboard Packaging, Inc. – Frontier Site**

SIU PERMIT NO.: **078**

SAMPLE LOCATION: **Total Sum of Bedrock A and B Zones**

	RESULTS µg/L	/ µg/L	RESULTS pounds/day	/pounds/day	ANNUAL AVERAGE µg/L	ANNUAL AVERAGE pounds/day
DATE SAMPLED: April 5, 2022						
24-HOUR FLOW IN MGD	0.001503				0.001708	
BENZENE			0.0019			0.0019
MONOCHLOROBENZENE			0.0030			0.0035
1,2 - DICHLOROBENZENE			0.0051			0.0067
1,3 - DICHLOROBENZENE			0.0019			0.0026
1,4 - DICHLOROBENZENE			0.0040			0.0046
1,2,4 - TRICHLOROBENZENE			0.0004			0.0005
1,1 - DICHLOROETHANE			0.0006			0.0006
CIS – 1,2 - DICHLOROETHYLENE			0.0025			0.0020
ACETONE			0.0000			0.0000
TETRACHLOROETHYLENE			0.0007			0.0010
TOLUENE			0.0003			0.0004
TRICHLOROETHYLENE			0.0011			0.0014
VINYL CHLORIDE			0.0018			0.0014
MONOCHLOROTOLUENES			0.0049			0.0058
TOTAL PHENOL			0.0003			0.0003
ARSENIC			0.0002			0.0002
IRON			0.0136			0.0112
POTASSIUM			27.9692			29.1929
SODIUM			2.4656			2.6023

PART II

COMPLIANCE MONITORING

SIU NAME: Cascades Containerboard Packaging, Inc. – Frontier Site

PERMIT NO.: 078

NO VIOLATIONS

VIOLATION PARAMETER	DATE	FLOW [MGD]	SAMPLE POINT LOCATION	ACTUAL* DISCHARGE	PERMIT LIMIT	TYPE** LIMIT VIOLATED

NOTE:

* - Actual discharge – list actual analytical results and appropriate units.

** - Type Limit Violated – List Type:

A.A. = Annual Average

D.M. = Daily Maximum

L.L. = Local Limits (Regulation 1960.5)

ADMIN\WINWORD\PARADISE\SIU\SELF-MONITORING REPORT FORM - BLANK

CHAIN OF CUSTODY RECORD

COC NO.: 60064

PAGE 1 OF 2

Address: 2055 Niagara Falls Blvd

Phone: 716 297 6150 Fax:

Project No/ Phase/Task Code: 12595539 - DEL.001	Laboratory Name: Eurofins	Lab Location: Amherst NY	SSOW ID:
Project Name: Cascades Annual GW	Lab Contact: Denise Heckler		Cooler No:
Project Location: Niagara Falls NY			Carrier: Hand Delivered
GHD Chemistry Contact: Sheri Finn			Airbill No:
Sampler(s): K. Miller J. Kawecki D. Tyran			Total # of Containers: KM 104

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	SSPL VOCs	Total VOCs	SSPL Metals	Phenols	1,4 Dioxane	Chloral Pirrine								Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)						HC	HC	HN	H2		N										
1	WG-12595539-100422-KM-006	10/04/22	1122	WG	G	N	X		X	X	X									21	X	
2	WG-12595539-100422-KM-007	10/04/22	1140	WG	G	N	X		X	X	X									7		
3	WG-12595539-100422-KM-008	10/04/22	1308	WG	G	N	X		X	X	X									7		
4	WG-12595539-100422-KM-009	10/04/22	1335	WG	G	N	X		X	X										5		
5	WG-12595539-100522-KM-010	10/05/22	1010	WG	G	N		X												3		
6	WG-12595539-100422-KM-011	10/04/22	1335	WG	G	N	X		X	X										5		
7	WG-12595539-100522-KM-012	10/05/22	1204	WG	G	N	X		X	X		X								8		
8	WG-12595539-100522-KM-013	10/05/22	0925	WG	G	N	X		X	X										5		
9	WG-12595539-100522-KM-014	10/05/22	1338	WG	G	N		X												3		
10	WG-12595539-100522-KM-015	10/05/22	1055	WG	G	N		X												3		
11	WG-12595539-100622-KM-016	10/06/22	1010	WG	G	N	X		X	X	X									7		
12	WG-12595539-100522-KM-017	10/05/22	1220	WG	C	N	X		X	X		X								8		

TAT Required in business days (use separate COCs for different TATs):

☐ ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week

Notes/ Special Requirements:

* phosphate buffer & Ammonium chloride

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1.	GHD	10/06/22	1350	1.			
2.				2.			
3.				3.			

GHD

CHAIN OF CUSTODY RECORD

COC NO.: 60065

PAGE 2 OF 2

Address: 2055 Niagara Falls Blvd

Phone: 716 217 6150 Fax:

Project No/ Phase/Task Code: 12595539-DEL,001	Laboratory Name: Eurofins	Lab Location: Amherst NY	SSOW ID:
Project Name: Cascades Paper Annual GW	Lab Contact: Denise Heckler		Cooler No:
Project Location: Niagara Falls NY			Carrier: Hand Delivered
GHD Chemistry Contact: Shari Finn			Airbill No:
Sampler(s): K. Miller J. Kowecki D. Tyran			Total # of Containers: See Page 1

SAMPLE TYPE / **ANALYSIS REQUESTED** (See Back of COC for Definitions)

Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yy)	TIME (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	SSPL VOCs	Total VOCs	SSPL Metals	Phenols	1,4 Dioxane	Chloropicrine							Total Containers/sample	MS/MSD Request	COMMENTS/ SPECIAL INSTRUCTIONS:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)						HC	HC	HN	HZ		*									
1	WG-12595539-100622-KM-018	10/06/22	1200	WG	6	N	X		X	X									5		
2	WG-12595539-100522-KM-019	10/05/22	1340	WG	G	N	X		X	X		X							8		
3	WG-12595539-100622-KM-020	10/06/22	1110	WG	G	N	X		X	X	X								7		
4	TB-12595539-100422-	10/04/22	0900	TB	G	N		X											2		
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

TAT Required in business days (use separate COCs for different TATs):

☐ ☐1 Day ☐2 Days ☐3 Days ☐1Week ☐2Week Other

Notes/ Special Requirements:
* Phosphate buffer and Ammonium chloride

	RELINQUISHED BY	COMPANY	DATE	TIME		RECEIVED BY	COMPANY	DATE	TIME
1.	[signature]	GHD	10/06/22	1350	1.				
2.					2.				
3.					3.				

Attachment D

Laboratory Analytical Reports

eurofins | Environment Testing

ANALYTICAL REPORT

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-202330-1
Client Project/Site: 12595539, Cascades

For:
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Attn: Sheri Finn

Denise D Heckler

Authorized for release by:
11/6/2022 9:43:52 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
H	Sample was prepped or analyzed beyond the specified holding time
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.

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

Case Narrative

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Job ID: 480-202330-1

Laboratory: Eurofins Buffalo

Narrative

Job Narrative
480-202330-1

Comments
No additional comments.

Receipt
The samples were received on 10/4/2022 3:02 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

LCMS
Method 537 (modified): The "I" qualifier means the transition mass ratio for Perfluorohexanesulfonic acid (PFHxS) 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: WG-BH87-28-100422-KM-003 (480-202330-1) and WG-12595539-100422-KM-005 (480-202330-3).

Method 537 (modified): Results for samples WG-BH87-28-100422-KM-003 (480-202330-1), WG-12595539-100422-KM-005 (480-202330-3) and WG-12595539-100322-KM-001 (480-202330-4) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The "I" qualifier means the transition mass ratio for Perfluorononanoic acid (PFNA) 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: WG-12595539-100422-KM-005 (480-202330-3).

Method 537 (modified): The Isotope Dilution Analyte (IDA) recoveries associated with the following sample are below the method recommended limit: WG-12595539-100422-KM-005 (480-202330-3). The sample was re-extracted outside of the holding time with IDA recoveries within control limits. Both sets of data are reported. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

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 320-623576 were observed to be yellow and contain a thin layer of sediment present in the bottom of the bottle prior to extraction. WG-12595539-100422-KM-005 (480-202330-3), WG-12595539-100322-KM-001 (480-202330-4) and WG-12595539-100322-KM-002 (480-202330-5)

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-623576.

Method 3535: The following samples in preparation batch 320-623576 were yellow in color following concentration. WG-BH87-28-100422-KM-003 (480-202330-1), WG-12595539-100422-KM-004 (480-202330-2), WG-12595539-100422-KM-005 (480-202330-3) and WG-12595539-100322-KM-002 (480-202330-5)

Method 3535: The following sample was re-prepared outside of preparation holding time due to low IDA recoveries: WG-12595539-100422-KM-005 (480-202330-3).

Method 3535: Due to the matrix, the initial volume used for the following sample deviated from the standard procedure: WG-12595539-100422-KM-005 (480-202330-3). A 10x dilution was made on the sample, then fortified with IDA and extracted. The reporting limits (RLs) have been adjusted proportionately.

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

Detection Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Client Sample ID: WG-BH87-28-100422-KM-003 — Lab Sample ID: 480-202330-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	170		4.1	2.0	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	190		1.6	0.48	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	54		1.6	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	44		1.6	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15	I	1.6	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.3		1.6	0.44	ng/L	1		537 (modified)	Total/NA
8:2 FTS	3.6		1.6	0.38	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	580		8.2	2.0	ng/L	5		537 (modified)	Total/NA
6:2 FTS - DL	470		21	10	ng/L	5		537 (modified)	Total/NA

Client Sample ID: WG-12595539-100422-KM-004 — Lab Sample ID: 480-202330-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	100		4.2	2.0	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	240		1.7	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	94		1.7	0.48	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	38		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	55		1.7	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.6		1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.63	J	1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.85	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0		1.7	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.5		1.7	0.45	ng/L	1		537 (modified)	Total/NA
6:2 FTS	300		4.2	2.1	ng/L	1		537 (modified)	Total/NA
8:2 FTS	26		1.7	0.38	ng/L	1		537 (modified)	Total/NA

Client Sample ID: WG-12595539-100422-KM-005 — Lab Sample ID: 480-202330-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	290		1.7	0.48	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	110		1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	91		1.7	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	7.4	I	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	3.0		1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.8		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	19	I	1.7	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	24		1.7	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	1.8		1.7	0.81	ng/L	1		537 (modified)	Total/NA
8:2 FTS	74		1.7	0.38	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	460		42	20	ng/L	10		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	770		17	4.1	ng/L	10		537 (modified)	Total/NA
6:2 FTS - DL	1400		42	21	ng/L	10		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA) - RE	230	H	50	24	ng/L	1		537 (modified)	Total/NA

Client Sample ID: WG-12595539-100322-KM-001 — Lab Sample ID: 480-202330-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	55		4.0	1.9	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	230		1.6	0.39	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	72		1.6	0.46	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	28		1.6	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	52		1.6	0.67	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Buffalo

Client Sample ID: WG-12595539-100322-KM-001 (Continued) — Lab Sample ID: 480-202330-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	10		1.6	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.8		1.6	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.5		1.6	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.4		1.6	0.45	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic acid (PFHpS)	0.59	J	1.6	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	34		1.6	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	2.3		1.6	0.77	ng/L	1		537 (modified)	Total/NA
8:2 FTS	53		1.6	0.36	ng/L	1		537 (modified)	Total/NA
6:2 FTS - DL	310		20	9.9	ng/L	5		537 (modified)	Total/NA

Client Sample ID: WG-12595539-100322-KM-002 — Lab Sample ID: 480-202330-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	31		4.1	2.0	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	77		1.6	0.40	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	35		1.6	0.48	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	13		1.6	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	24		1.6	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.0	J	1.6	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.30	J	1.6	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.6	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.6	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	0.83	J	1.6	0.81	ng/L	1		537 (modified)	Total/NA
6:2 FTS	180		4.1	2.1	ng/L	1		537 (modified)	Total/NA
8:2 FTS	16		1.6	0.38	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: WG-BH87-28-100422-KM-003

Lab Sample ID: 480-202330-1

Date Collected: 10/03/22 09:15

Matrix: Water

Date Received: 10/04/22 15:02

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**170**		4.1	2.0	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorohexanoic acid (PFHxA)	**190**		1.6	0.48	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluoroheptanoic acid (PFHpA)	**54**		1.6	0.21	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorooctanoic acid (PFOA)	**44**		1.6	0.70	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.25	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.90	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	1.1	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.60	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorohexanesulfonic acid (PFHxS)	**15**	I	1.6	0.47	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.6	0.16	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorooctanesulfonic acid (PFOS)	**4.3**		1.6	0.44	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26	ng/L		10/09/22 13:19	10/10/22 16:39	1
Perfluorooctanesulfonamide (FOSA)	ND		1.6	0.81	ng/L		10/09/22 13:19	10/10/22 16:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.99	ng/L		10/09/22 13:19	10/10/22 16:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		10/09/22 13:19	10/10/22 16:39	1
8:2 FTS	**3.6**		1.6	0.38	ng/L		10/09/22 13:19	10/10/22 16:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*37*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C2 PFHxA	*99*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C4 PFHpA	*92*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C4 PFOA	*94*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C5 PFNA	*103*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C2 PFDA	*97*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C2 PFUnA	*96*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C2 PFDoA	*83*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C2 PFTeDA	*75*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C3 PFBS	*83*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
18O2 PFHxS	*101*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C4 PFOS	*105*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
13C8 FOSA	*101*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*
M2-8:2 FTS	*84*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:39*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	**580**		8.2	2.0	ng/L		10/09/22 13:19	10/14/22 09:58	5
6:2 FTS	**470**		21	10	ng/L		10/09/22 13:19	10/14/22 09:58	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5-PFPeA	*86*		*25 - 150*	*10/09/22 13:19*	*10/14/22 09:58*	*5*
M2-6:2 FTS	*80*		*25 - 150*	*10/09/22 13:19*	*10/14/22 09:58*	*5*

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Client Sample ID: WG-12595539-100422-KM-004
Date Collected: 10/04/22 09:45
Date Received: 10/04/22 15:02

Lab Sample ID: 480-202330-2
Matrix: Water

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**100**		4.2	2.0	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluoropentanoic acid (PFPeA)	**240**		1.7	0.41	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorohexanoic acid (PFHxA)	**94**		1.7	0.48	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluoroheptanoic acid (PFHpA)	**38**		1.7	0.21	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorooctanoic acid (PFOA)	**55**		1.7	0.71	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorononanoic acid (PFNA)	**2.6**		1.7	0.22	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorodecanoic acid (PFDA)	**0.63**	**J**	1.7	0.26	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.91	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorobutanesulfonic acid (PFBS)	**0.85**	**J**	1.7	0.17	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorohexanesulfonic acid (PFHxS)	**2.0**		1.7	0.47	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.16	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorooctanesulfonic acid (PFOS)	**2.5**		1.7	0.45	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27	ng/L		10/09/22 13:19	10/10/22 16:49	1
Perfluorooctanesulfonamide (FOSA)	ND		1.7	0.81	ng/L		10/09/22 13:19	10/10/22 16:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		10/09/22 13:19	10/10/22 16:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		10/09/22 13:19	10/10/22 16:49	1
6:2 FTS	**300**		4.2	2.1	ng/L		10/09/22 13:19	10/10/22 16:49	1
8:2 FTS	**26**		1.7	0.38	ng/L		10/09/22 13:19	10/10/22 16:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*48*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C5-PFPeA	*72*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C2 PFHxA	*105*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C4 PFHpA	*96*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C4 PFOA	*98*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C5 PFNA	*101*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C2 PFDA	*100*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C2 PFUnA	*99*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C2 PFDoA	*90*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C3 PFBS	*86*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
18O2 PFHxS	*107*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C4 PFOS	*111*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
13C8 FOSA	*108*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
d3-NMeFOSAA	*103*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
d5-NEtFOSAA	*106*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:49*	*1*

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Client Sample ID: WG-12595539-100422-KM-005
Date Collected: 10/04/22 10:40
Date Received: 10/04/22 15:02

Lab Sample ID: 480-202330-3
Matrix: Water

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**290**		1.7	0.48	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluoroheptanoic acid (PFHpA)	**110**		1.7	0.21	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorooctanoic acid (PFOA)	**91**		1.7	0.71	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorononanoic acid (PFNA)	**7.4**	I	1.7	0.22	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorodecanoic acid (PFDA)	**3.0**		1.7	0.26	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.91	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	1.1	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.61	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorobutanesulfonic acid (PFBS)	**2.8**		1.7	0.17	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorohexanesulfonic acid (PFHxS)	**19**	I	1.7	0.47	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.7	0.16	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorooctanesulfonic acid (PFOS)	**24**		1.7	0.45	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27	ng/L		10/09/22 13:19	10/10/22 16:59	1
Perfluorooctanesulfonamide (FOSA)	**1.8**		1.7	0.81	ng/L		10/09/22 13:19	10/10/22 16:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.2	1.0	ng/L		10/09/22 13:19	10/10/22 16:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.2	1.1	ng/L		10/09/22 13:19	10/10/22 16:59	1
8:2 FTS	**74**		1.7	0.38	ng/L		10/09/22 13:19	10/10/22 16:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*104*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C4 PFHpA	*99*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C4 PFOA	*96*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C5 PFNA	*104*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C2 PFDA	*102*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C2 PFUnA	*100*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C2 PFDoA	*99*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C2 PFTeDA	*81*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C3 PFBS	*88*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
18O2 PFHxS	*105*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C4 PFOS	*110*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
13C8 FOSA	*105*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
d5-NEtFOSAA	*103*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*
M2-8:2 FTS	*99*		*25 - 150*	*10/09/22 13:19*	*10/10/22 16:59*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**460**		42	20	ng/L		10/09/22 13:19	10/14/22 09:48	10
Perfluoropentanoic acid (PFPeA)	**770**		17	4.1	ng/L		10/09/22 13:19	10/14/22 09:48	10
6:2 FTS	**1400**		42	21	ng/L		10/09/22 13:19	10/14/22 09:48	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*7*	*5-	*25 - 150*	*10/09/22 13:19*	*10/14/22 09:48*	*10*
13C5-PFPeA	*89*		*25 - 150*	*10/09/22 13:19*	*10/14/22 09:48*	*10*
M2-6:2 FTS	*78*		*25 - 150*	*10/09/22 13:19*	*10/14/22 09:48*	*10*

Client Sample ID: WG-12595539-100422-KM-005

Lab Sample ID: 480-202330-3

Date Collected: 10/04/22 10:40

Matrix: Water

Date Received: 10/04/22 15:02

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**230**	**H**	50	24	ng/L		10/30/22 18:59	11/01/22 15:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*75*		*25 - 150*	*10/30/22 18:59*	*11/01/22 15:06*	*1*

Client Sample ID: WG-12595539-100322-KM-001

Lab Sample ID: 480-202330-4

Date Collected: 10/03/22 13:30

Matrix: Water

Date Received: 10/04/22 15:02

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**55**		4.0	1.9	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluoropentanoic acid (PFPeA)	**230**		1.6	0.39	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorohexanoic acid (PFHxA)	**72**		1.6	0.46	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluoroheptanoic acid (PFHpA)	**28**		1.6	0.20	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorooctanoic acid (PFOA)	**52**		1.6	0.67	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorononanoic acid (PFNA)	**10**		1.6	0.21	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorodecanoic acid (PFDA)	**1.8**		1.6	0.24	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.87	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.43	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	1.0	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.58	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorobutanesulfonic acid (PFBS)	**2.5**		1.6	0.16	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorohexanesulfonic acid (PFHxS)	**2.4**		1.6	0.45	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluoroheptanesulfonic acid (PFHpS)	**0.59**	**J**	1.6	0.15	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorooctanesulfonic acid (PFOS)	**34**		1.6	0.43	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.25	ng/L		10/09/22 13:19	10/10/22 17:09	1
Perfluorooctanesulfonamide (FOSA)	**2.3**		1.6	0.77	ng/L		10/09/22 13:19	10/10/22 17:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.0	0.95	ng/L		10/09/22 13:19	10/10/22 17:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.0	1.0	ng/L		10/09/22 13:19	10/10/22 17:09	1
8:2 FTS	**53**		1.6	0.36	ng/L		10/09/22 13:19	10/10/22 17:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*68*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C5-PFPeA	*85*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C2 PFHxA	*103*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C4 PFHpA	*92*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C4 PFOA	*88*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C5 PFNA	*93*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C2 PFDA	*91*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C2 PFUnA	*84*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C2 PFDoA	*80*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C2 PFTeDA	*81*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C3 PFBS	*86*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
18O2 PFHxS	*100*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*
13C4 PFOS	*95*		*25 - 150*	*10/09/22 13:19*	*10/10/22 17:09*	*1*

Client Sample ID: WG-12595539-100322-KM-001

Lab Sample ID: 480-202330-4

Date Collected: 10/03/22 13:30

Matrix: Water

Date Received: 10/04/22 15:02

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	93		25 - 150	10/09/22 13:19	10/10/22 17:09	1
d3-NMeFOSAA	89		25 - 150	10/09/22 13:19	10/10/22 17:09	1
d5-NEtFOSAA	92		25 - 150	10/09/22 13:19	10/10/22 17:09	1
M2-8:2 FTS	67		25 - 150	10/09/22 13:19	10/10/22 17:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2 FTS	**310**		20	9.9	ng/L		10/09/22 13:19	10/14/22 10:08	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	71		25 - 150	10/09/22 13:19	10/14/22 10:08	5

Client Sample ID: WG-12595539-100322-KM-002

Lab Sample ID: 480-202330-5

Date Collected: 10/03/22 13:40

Matrix: Water

Date Received: 10/04/22 15:02

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**31**		4.1	2.0	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluoropentanoic acid (PFPeA)	**77**		1.6	0.40	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorohexanoic acid (PFHxA)	**35**		1.6	0.48	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluoroheptanoic acid (PFHpA)	**13**		1.6	0.21	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorooctanoic acid (PFOA)	**24**		1.6	0.70	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorononanoic acid (PFNA)	**1.0**	**J**	1.6	0.22	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorodecanoic acid (PFDA)	**0.30**	**J**	1.6	0.26	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.91	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	1.1	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.60	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorobutanesulfonic acid (PFBS)	**1.4**	**J**	1.6	0.16	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorohexanesulfonic acid (PFHxS)	**1.4**	**J**	1.6	0.47	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.6	0.16	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.45	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26	ng/L		10/09/22 13:19	10/10/22 17:19	1
Perfluorooctanesulfonamide (FOSA)	**0.83**	**J**	1.6	0.81	ng/L		10/09/22 13:19	10/10/22 17:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		4.1	0.99	ng/L		10/09/22 13:19	10/10/22 17:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		4.1	1.1	ng/L		10/09/22 13:19	10/10/22 17:19	1
6:2 FTS	**180**		4.1	2.1	ng/L		10/09/22 13:19	10/10/22 17:19	1
8:2 FTS	**16**		1.6	0.38	ng/L		10/09/22 13:19	10/10/22 17:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	57		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C5-PFPeA	90		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C2 PFHxA	112		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C4 PFHpA	105		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C4 PFOA	98		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C5 PFNA	108		25 - 150	10/09/22 13:19	10/10/22 17:19	1

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Client Sample ID: WG-12595539-100322-KM-002
Date Collected: 10/03/22 13:40
Date Received: 10/04/22 15:02

Lab Sample ID: 480-202330-5
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	107		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C2 PFUnA	97		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C2 PFDoA	100		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C2 PFTeDA	94		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C3 PFBS	98		25 - 150	10/09/22 13:19	10/10/22 17:19	1
18O2 PFHxS	112		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C4 PFOS	116		25 - 150	10/09/22 13:19	10/10/22 17:19	1
13C8 FOSA	114		25 - 150	10/09/22 13:19	10/10/22 17:19	1
d3-NMeFOSAA	99		25 - 150	10/09/22 13:19	10/10/22 17:19	1
d5-NEtFOSAA	96		25 - 150	10/09/22 13:19	10/10/22 17:19	1
M2-6:2 FTS	110		25 - 150	10/09/22 13:19	10/10/22 17:19	1
M2-8:2 FTS	87		25 - 150	10/09/22 13:19	10/10/22 17:19	1

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

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)
480-202330-1	WG-BH87-28-100422-KM-003	37		99	92	94	103	97	96
480-202330-1 - DL	WG-BH87-28-100422-KM-003		86						
480-202330-2	WG-12595539-100422-KM-004	48	72	105	96	98	101	100	99
480-202330-3	WG-12595539-100422-KM-005			104	99	96	104	102	100
480-202330-3 - DL	WG-12595539-100422-KM-005	7 *5-	89						
480-202330-3 - RE	WG-12595539-100422-KM-005	75							
480-202330-4	WG-12595539-100322-KM-001	68	85	103	92	88	93	91	84
480-202330-4 - DL	WG-12595539-100322-KM-001								
480-202330-5	WG-12595539-100322-KM-002	57	90	112	105	98	108	107	97
LCS 320-623576/2-A	Lab Control Sample	102	102	100	100	102	102	103	97
LCS 320-628950/2-A	Lab Control Sample	94							
LCSD 320-623576/3-A	Lab Control Sample Dup	95	100	101	98	99	94	98	94
LCSD 320-628950/3-A	Lab Control Sample Dup	92							
MB 320-623576/1-A	Method Blank	99	100	101	103	98	104	103	99
MB 320-628950/1-A	Method Blank	100							

		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 (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
480-202330-1	WG-BH87-28-100422-KM-003	83	75	83	101	105	101	93	98
480-202330-1 - DL	WG-BH87-28-100422-KM-003								
480-202330-2	WG-12595539-100422-KM-004	90	83	86	107	111	108	103	106
480-202330-3	WG-12595539-100422-KM-005	99	81	88	105	110	105	93	103
480-202330-3 - DL	WG-12595539-100422-KM-005								
480-202330-3 - RE	WG-12595539-100422-KM-005								
480-202330-4	WG-12595539-100322-KM-001	80	81	86	100	95	93	89	92
480-202330-4 - DL	WG-12595539-100322-KM-001								
480-202330-5	WG-12595539-100322-KM-002	100	94	98	112	116	114	99	96
LCS 320-623576/2-A	Lab Control Sample	97	92	102	110	106	102	120	119
LCS 320-628950/2-A	Lab Control Sample								
LCSD 320-623576/3-A	Lab Control Sample Dup	91	88	92	107	98	97	114	108
LCSD 320-628950/3-A	Lab Control Sample Dup								
MB 320-623576/1-A	Method Blank	96	92	101	111	110	100	117	116
MB 320-628950/1-A	Method Blank								

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)						
480-202330-1	WG-BH87-28-100422-KM-003		84						
480-202330-1 - DL	WG-BH87-28-100422-KM-003	80							
480-202330-2	WG-12595539-100422-KM-004	93	86						
480-202330-3	WG-12595539-100422-KM-005		99						
480-202330-3 - DL	WG-12595539-100422-KM-005	78							
480-202330-3 - RE	WG-12595539-100422-KM-005								
480-202330-4	WG-12595539-100322-KM-001		67						
480-202330-4 - DL	WG-12595539-100322-KM-001	71							
480-202330-5	WG-12595539-100322-KM-002	110	87						
LCS 320-623576/2-A	Lab Control Sample	85	82						
LCS 320-628950/2-A	Lab Control Sample								
LCSD 320-623576/3-A	Lab Control Sample Dup	80	77						
LCSD 320-628950/3-A	Lab Control Sample Dup								

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 480-202330-1
Project/Site: 12595539, Cascades

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**	**M262FTS (25-150)**	**M282FTS (25-150)**								
MB 320-623576/1-A	Method Blank	93	86								
MB 320-628950/1-A	Method Blank										

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
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-623576/1-A
Matrix: Water
Analysis Batch: 623856

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 623576

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		5.0	2.4	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.73	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.57	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	0.19	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32	ng/L		10/09/22 13:19	10/10/22 14:07	1
Perfluorooctanesulfonamide (FOSA)	ND		2.0	0.98	ng/L		10/09/22 13:19	10/10/22 14:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		5.0	1.2	ng/L		10/09/22 13:19	10/10/22 14:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0	1.3	ng/L		10/09/22 13:19	10/10/22 14:07	1
6:2 FTS	ND		5.0	2.5	ng/L		10/09/22 13:19	10/10/22 14:07	1
8:2 FTS	ND		2.0	0.46	ng/L		10/09/22 13:19	10/10/22 14:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*99*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C5-PFPeA	*100*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C2 PFHxA	*101*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C4 PFHpA	*103*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C4 PFOA	*98*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C5 PFNA	*104*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C2 PFDA	*103*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C2 PFUnA	*99*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C2 PFDoA	*96*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C2 PFTeDA	*92*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C3 PFBS	*101*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
18O2 PFHxS	*111*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C4 PFOS	*110*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
13C8 FOSA	*100*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
d3-NMeFOSAA	*117*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
d5-NEtFOSAA	*116*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*10/09/22 13:19*	*10/10/22 14:07*	*1*

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

Lab Sample ID: LCS 320-623576/2-A
Matrix: Water
Analysis Batch: 623856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 623576

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	40.0	43.1		ng/L		108	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	44.1		ng/L		110	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	42.4		ng/L		106	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	43.3		ng/L		108	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	43.2		ng/L		108	70 - 130
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	37.7		ng/L		94	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	44.4		ng/L		111	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	43.5		ng/L		109	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	40.9		ng/L		102	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	40.3		ng/L		101	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.5	39.3		ng/L		111	67 - 127
Perfluorohexanesulfonic acid (PFHxS)	36.5	36.6		ng/L		100	59 - 119
Perfluoroheptanesulfonic acid (PFHpS)	38.2	42.8		ng/L		112	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.2	40.3		ng/L		108	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	40.7		ng/L		106	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	45.7		ng/L		114	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	37.1		ng/L		93	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.5		ng/L		104	76 - 136
6:2 FTS	38.1	35.3		ng/L		93	59 - 175
8:2 FTS	38.4	38.7		ng/L		101	75 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*102*		*25 - 150*
13C5-PFPeA	*102*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*102*		*25 - 150*
13C5 PFNA	*102*		*25 - 150*
13C2 PFDA	*103*		*25 - 150*
13C2 PFUnA	*97*		*25 - 150*
13C2 PFDoA	*97*		*25 - 150*
13C2 PFTeDA	*92*		*25 - 150*
13C3 PFBS	*102*		*25 - 150*
18O2 PFHxS	*110*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*
13C8 FOSA	*102*		*25 - 150*
d3-NMeFOSAA	*120*		*25 - 150*
d5-NEtFOSAA	*119*		*25 - 150*

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

Lab Sample ID: LCS 320-623576/2-A
Matrix: Water
Analysis Batch: 623856

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 623576

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-6:2 FTS	*85*		*25 - 150*
M2-8:2 FTS	*82*		*25 - 150*

Lab Sample ID: LCSD 320-623576/3-A
Matrix: Water
Analysis Batch: 623856

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 623576

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	44.0		ng/L		110	76 - 136	2	30
Perfluoropentanoic acid (PFPeA)			40.0	43.9		ng/L		110	71 - 131	1	30
Perfluorohexanoic acid (PFHxA)			40.0	42.9		ng/L		107	73 - 133	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	44.6		ng/L		111	72 - 132	3	30
Perfluorooctanoic acid (PFOA)			40.0	42.5		ng/L		106	70 - 130	2	30
Perfluorononanoic acid (PFNA)			40.0	45.1		ng/L		113	75 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	41.8		ng/L		105	76 - 136	10	30
Perfluoroundecanoic acid (PFUnA)			40.0	43.7		ng/L		109	68 - 128	2	30
Perfluorododecanoic acid (PFDoA)			40.0	45.3		ng/L		113	71 - 131	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	40.8		ng/L		102	71 - 131	0	30
Perfluorotetradecanoic acid (PFTeA)			40.0	38.8		ng/L		97	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)			35.5	40.7		ng/L		114	67 - 127	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.5	35.3		ng/L		97	59 - 119	4	30
Perfluoroheptanesulfonic acid (PFHpS)			38.2	44.3		ng/L		116	76 - 136	3	30
Perfluorooctanesulfonic acid (PFOS)			37.2	41.0		ng/L		110	70 - 130	2	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.9		ng/L		106	71 - 131	0	30
Perfluorooctanesulfonamide (FOSA)			40.0	43.8		ng/L		110	73 - 133	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	36.4		ng/L		91	76 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	41.5		ng/L		104	76 - 136	0	30
6:2 FTS			38.1	36.3		ng/L		95	59 - 175	3	30
8:2 FTS			38.4	41.0		ng/L		107	75 - 135	6	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFBA	*95*		*25 - 150*
13C5-PFPeA	*100*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*98*		*25 - 150*
13C4 PFOA	*99*		*25 - 150*
13C5 PFNA	*94*		*25 - 150*
13C2 PFDA	*98*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*91*		*25 - 150*

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

Lab Sample ID: LCSD 320-623576/3-A
Matrix: Water
Analysis Batch: 623856

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 623576

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFTeDA	88		25 - 150
13C3 PFBS	92		25 - 150
18O2 PFHxS	107		25 - 150
13C4 PFOS	98		25 - 150
13C8 FOSA	97		25 - 150
d3-NMeFOSAA	114		25 - 150
d5-NEtFOSAA	108		25 - 150
M2-6:2 FTS	80		25 - 150
M2-8:2 FTS	77		25 - 150

Lab Sample ID: MB 320-628950/1-A
Matrix: Water
Analysis Batch: 629504

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 628950

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		5.0	2.4	ng/L		10/30/22 18:59	11/01/22 14:25	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	100		25 - 150	10/30/22 18:59	11/01/22 14:25	1

Lab Sample ID: LCS 320-628950/2-A
Matrix: Water
Analysis Batch: 629504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 628950

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluorobutanoic acid (PFBA)			40.0	45.0		ng/L		112	76 - 136		

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	94		25 - 150

Lab Sample ID: LCSD 320-628950/3-A
Matrix: Water
Analysis Batch: 629504

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 628950

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	46.2		ng/L		116	76 - 136	3	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFBA	92		25 - 150

LCMS

Prep Batch: 623576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202330-1 - DL	WG-BH87-28-100422-KM-003	Total/NA	Water	3535	
480-202330-1	WG-BH87-28-100422-KM-003	Total/NA	Water	3535	
480-202330-2	WG-12595539-100422-KM-004	Total/NA	Water	3535	
480-202330-3 - DL	WG-12595539-100422-KM-005	Total/NA	Water	3535	
480-202330-3	WG-12595539-100422-KM-005	Total/NA	Water	3535	
480-202330-4 - DL	WG-12595539-100322-KM-001	Total/NA	Water	3535	
480-202330-4	WG-12595539-100322-KM-001	Total/NA	Water	3535	
480-202330-5	WG-12595539-100322-KM-002	Total/NA	Water	3535	
MB 320-623576/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-623576/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-623576/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 623856

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202330-1	WG-BH87-28-100422-KM-003	Total/NA	Water	537 (modified)	623576
480-202330-2	WG-12595539-100422-KM-004	Total/NA	Water	537 (modified)	623576
480-202330-3	WG-12595539-100422-KM-005	Total/NA	Water	537 (modified)	623576
480-202330-4	WG-12595539-100322-KM-001	Total/NA	Water	537 (modified)	623576
480-202330-5	WG-12595539-100322-KM-002	Total/NA	Water	537 (modified)	623576
MB 320-623576/1-A	Method Blank	Total/NA	Water	537 (modified)	623576
LCS 320-623576/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	623576
LCSD 320-623576/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	623576

Analysis Batch: 624837

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202330-1 - DL	WG-BH87-28-100422-KM-003	Total/NA	Water	537 (modified)	623576
480-202330-3 - DL	WG-12595539-100422-KM-005	Total/NA	Water	537 (modified)	623576
480-202330-4 - DL	WG-12595539-100322-KM-001	Total/NA	Water	537 (modified)	623576

Prep Batch: 628950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202330-3 - RE	WG-12595539-100422-KM-005	Total/NA	Water	3535	
MB 320-628950/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-628950/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-628950/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 629504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202330-3 - RE	WG-12595539-100422-KM-005	Total/NA	Water	537 (modified)	628950
MB 320-628950/1-A	Method Blank	Total/NA	Water	537 (modified)	628950
LCS 320-628950/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	628950
LCSD 320-628950/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	628950

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Client Sample ID: WG-BH87-28-100422-KM-003
Lab Sample ID: 480-202330-1
Date Collected: 10/03/22 09:15
Matrix: Water
Date Received: 10/04/22 15:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)		1	623856	K1S	EET SAC	10/10/22 16:39
Total/NA	Prep	3535	DL		623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)	DL	5	624837	D1R	EET SAC	10/14/22 09:58

Client Sample ID: WG-12595539-100422-KM-004
Lab Sample ID: 480-202330-2
Date Collected: 10/04/22 09:45
Matrix: Water
Date Received: 10/04/22 15:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)		1	623856	K1S	EET SAC	10/10/22 16:49

Client Sample ID: WG-12595539-100422-KM-005
Lab Sample ID: 480-202330-3
Date Collected: 10/04/22 10:40
Matrix: Water
Date Received: 10/04/22 15:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)		1	623856	K1S	EET SAC	10/10/22 16:59
Total/NA	Prep	3535	DL		623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)	DL	10	624837	D1R	EET SAC	10/14/22 09:48
Total/NA	Prep	3535	RE		628950	PV	EET SAC	10/30/22 18:59
Total/NA	Analysis	537 (modified)	RE	1	629504	RS1	EET SAC	11/01/22 15:06

Client Sample ID: WG-12595539-100322-KM-001
Lab Sample ID: 480-202330-4
Date Collected: 10/03/22 13:30
Matrix: Water
Date Received: 10/04/22 15:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)		1	623856	K1S	EET SAC	10/10/22 17:09
Total/NA	Prep	3535	DL		623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)	DL	5	624837	D1R	EET SAC	10/14/22 10:08

Client Sample ID: WG-12595539-100322-KM-002
Lab Sample ID: 480-202330-5
Date Collected: 10/03/22 13:40
Matrix: Water
Date Received: 10/04/22 15:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			623576	PV	EET SAC	10/09/22 13:19
Total/NA	Analysis	537 (modified)		1	623856	K1S	EET SAC	10/10/22 17:19

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Laboratory: Eurofins Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	11666	04-01-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	6:2 FTS
537 (modified)	3535	Water	8:2 FTS
537 (modified)	3535	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	3535	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	3535	Water	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (modified)	3535	Water	Perfluorooctanesulfonamide (FOSA)
537 (modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	3535	Water	Perfluorotridecanoic acid (PFTriA)
537 (modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
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 SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202330-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-202330-1	WG-BH87-28-100422-KM-003	Water	10/03/22 09:15	10/04/22 15:02
480-202330-2	WG-12595539-100422-KM-004	Water	10/04/22 09:45	10/04/22 15:02
480-202330-3	WG-12595539-100422-KM-005	Water	10/04/22 10:40	10/04/22 15:02
480-202330-4	WG-12595539-100322-KM-001	Water	10/03/22 13:30	10/04/22 15:02
480-202330-5	WG-12595539-100322-KM-002	Water	10/03/22 13:40	10/04/22 15:02

CHAIN OF CUSTODY RECORD

COC NO.: 60061

PAGE 1 OF 1

Address: NF office

Phone: 716-297-6150 Fax:

Project No/ Phase/Task Code:	Laboratory Name: Eurofins TestAmerica Buffalo	Lab Location: Amherst, NY	SSOW ID:
Project Name: Cascades Frontier Annual PFAS	Lab Contact: Denise Heckler		Cooler No:
Project Location: 47th and Royal Ave, Niagara Falls			Carrier: Hand Delivered
GHD Chemistry Contact: Sherry Finn			Airbill No:
Sampler(s): K. Miller J. Kaweski D. Tyran			Total # of Containers: 10

480-202330 Chain of Custody

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	PFAS	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)								
1	WG-BH97-28-100422-KM-00	10/03/22	0915	WG	G	N	X	2	
2	WG-17595539-100422-KM-00	10/04/22	0945	WG	G	N	X	2	
3	WG-17595539-100422-KM-00	10/04/22	1040	WG	G	N	X	2	
4	WG-17595539-100322-KM-00	10/03/22	1330	WG	G	N	X	2	
5	WG-17595539-100322-KM-00	10/03/22	1340	WG	G	N	X	2	
6									
7									
8									
9									
10									
11									
12									

JEK

TAT Required in business days (use separate COCs for different TATs):

☐ ☐1 Day ☑2 Days ☐3 Days ☐1Week ☒2Week

Notes/ Special Requirements: Temp 2.8 # ICE

	Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1.	Jacek Kaweski	GHD	10/04/22	1502	1.	TA	10/4/22	1502
2.					2.			
3.					3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy – Shipper GOLDENROD – Sampling Crew

11/6/2022

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 480-75796.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@et.eurofinsus.com	State of Origin: New York	Page: Page 1 of 1
Company: Eurofins Environment Testing Northern Ca		Accreditations Required (See note): NELAP - New York		Job #: 480-202330-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/24/2022			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605	PO #:			
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	WO #:			
Email:	Project #: 48017427			
Project Name: 11109628, Cascades	SSOW#:			
Site:				

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, 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)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC PFAS, Standard List (21 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
WG-BH87-28-100422-KM-008 (480-202330-1)	10/3/22	09:15 Eastern		Water			X	2	
WG-12595539-100422-KM-004 (480-202330-2)	10/4/22	09:45 Eastern		Water			X	2	
WG-12595539-100422-KM-005 (480-202330-3)	10/4/22	10:40 Eastern		Water			X	2	
WG-12595539-100322-KM-001 (480-202330-4)	10/3/22	13:30 Eastern		Water			X	2	
WG-12595539-100322-KM-002 (480-202330-5)	10/3/22	13:40 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northeast, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 10-5-22 1800	Company TAB	Received by:	Date/Time: 10:00 GLO	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 1963646	Cooler Temperature(s) °C and Other Remarks: 1.7u

Ver: 06/08/2021

11/6/2022

eurofins | Environment Testing TestAmerica

Sacramento
Sample Receiving Notes

480-202330 Field Sheet

Job: _____

Tracking # : 575401275675

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: L-02 Corr. Factor: (+ / -) - °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 19636416

Cooler ID: _____

Temp Observed: 1.7 °C Corrected: 1.7 °C

From: Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Frozen samples show signs of thaw?	☐	☐	☑

Initials: KS Date: 10.6.22

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

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

Initials: KS Date: 10.6.22

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☐	☑
Log Release checked in TALS?	☐	☐	☑

Initials: KS Date: 10.6.22

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-202330-1

Login Number: 202330
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins Buffalo

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	
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	GHD
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-202330-1

Login Number: 202330
List Number: 2
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 10/06/22 12:45 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	1963646
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	1.7c
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?	False	Received project as a subcontract.
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	

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ANALYTICAL REPORT

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-202439-1
Client Project/Site: 12595539, Cascades

For:
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Attn: Sheri Finn

Denise D Heckler

Authorized for release by:
10/24/2022 1:43:14 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
^2	Calibration Blank (ICB and/or CCB) is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
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
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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

Job ID: 480-202439-1

Laboratory: Eurofins Buffalo

Narrative

Job Narrative
480-202439-1

Comments
No additional comments.

Receipt
The samples were received on 10/6/2022 2:37 PM. 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 2.1º C and 3.2º C.

GC/MS VOA
Method 624.1: The following samples were diluted to bring the concentration of target analytes within the calibration range: WG-12595539-100422-KM-006 (480-202439-1), WG-12595539-100422-KM-006 (480-202439-1[MS]), WG-12595539-100422-KM-006 (480-202439-1[MSD]), WG-12595539-100422-KM-007 (480-202439-2), WG-12595539-100422-KM-008 (480-202439-3), WG-12595539-100422-KM-009 (480-202439-4), WG-12595539-100422-KM-011 (480-202439-6), WG-12595539-100522-KM-012 (480-202439-7), WG-12595539-100522-KM-013 (480-202439-8), WG-12595539-100622-KM-016 (480-202439-11), WG-12595539-100522-KM-017 (480-202439-12) and WG-12595539-100522-KM-019 (480-202439-14). Elevated reporting limits (RLs) are provided.

Method 624.1: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: WG-12595539-100622-KM-018 (480-202439-13). Elevated reporting limits (RLs) are provided.

Method 624.1: The continuing calibration verification (CCV) associated with batch 480-644480 recovered above the upper control limit for Acetone. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: WG-12595539-100422-KM-006 (480-202439-1), WG-12595539-100422-KM-007 (480-202439-2), WG-12595539-100422-KM-008 (480-202439-3), WG-12595539-100422-KM-009 (480-202439-4), WG-12595539-100422-KM-011 (480-202439-6), WG-12595539-100522-KM-012 (480-202439-7), WG-12595539-100522-KM-013 (480-202439-8), WG-12595539-100622-KM-016 (480-202439-11), WG-12595539-100522-KM-017 (480-202439-12), WG-12595539-100622-KM-018 (480-202439-13), WG-12595539-100522-KM-019 (480-202439-14) and TB-12595539-100422 (480-202439-16).

Method 624.1: The laboratory control sample (LCS) for analytical batch 480-644480 recovered outside control limits for the following analyte(s): Acetone. Acetone has been identified as a poor performing analyte when analyzed using this method; therefore, re-analysis was not performed.

Method 624.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 480-644480 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 624.1: The following samples were diluted to bring the concentration of target analytes within the calibration range: WG-12595539-100422-KM-007 (480-202439-2), WG-12595539-100522-KM-013 (480-202439-8), WG-12595539-100522-KM-015 (480-202439-10) and WG-12595539-100622-KM-020 (480-202439-15). Elevated reporting limits (RLs) are provided.

Method 624.1: The following sample was diluted to bring the concentration of target analytes within the calibration range: WG-12595539-100522-KM-017 (480-202439-12). Elevated reporting limits (RLs) are provided.

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

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

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

Metals
Method 200.7 Rev 4.4: The continuing calibration blank (CCB 480-644838/39) contained Total Potassium above the reporting limit (RL).

Job ID: 480-202439-1 (Continued)

Laboratory: Eurofins Buffalo (Continued)

All reported samples WG-12595539-100422-KM-009 (480-202439-4), WG-12595539-100422-KM-011 (480-202439-6), WG-12595539-100522-KM-012 (480-202439-7), WG-12595539-100522-KM-013 (480-202439-8), WG-12595539-100522-KM-017 (480-202439-12), WG-12595539-100522-KM-019 (480-202439-14), WG-12595539-100622-KM-020 (480-202439-15), (480-202439-A-4-B MS) and (480-202439-A-4-C MSD) associated with this CCB were either ND for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed.

Method 200.7 Rev 4.4: The continuing calibration blank (CCB 480-645057/49) contained Total Potassium above the reporting limit (RL). All reported samples WG-12595539-100422-KM-006 (480-202439-1), WG-12595539-100422-KM-006 (480-202439-1[MS]), WG-12595539-100422-KM-006 (480-202439-1[MSD]), WG-12595539-100422-KM-007 (480-202439-2), (480-202439-C-1-A PDS ^5) and (480-202439-C-1-A SD ^25) associated with this CCB were either ND for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed.

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

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

Organic Prep
Method 3510C: Elevated reporting limits are provided for the following samples due to insufficient sample provided for 8270 SIM preparation: WG-12595539-100422-KM-006 (480-202439-1[MS]) and WG-12595539-100422-KM-006 (480-202439-1[MSD]).

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

Detection Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Client Sample ID: WG-12595539-100422-KM-006 — Lab Sample ID: 480-202439-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	27	J	50	5.9	ug/L	10		624.1	Total/NA
1,2-Dichlorobenzene	36	J	50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	140		50	5.4	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene	200		50	5.1	ug/L	10		624.1	Total/NA
Chlorobenzene	310		50	4.8	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene	8.6	J	50	5.7	ug/L	10		624.1	Total/NA
Vinyl chloride	8.8	J	50	7.5	ug/L	10		624.1	Total/NA
2-Chlorotoluene	210	F1	50	3.3	ug/L	10		624.1	Total/NA
4-Chlorotoluene	6.2	J	50	2.7	ug/L	10		624.1	Total/NA
1,4-Dioxane	8.6		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Arsenic	0.015		0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	0.80		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	906	^2	2.5	0.50	mg/L	5		200.7 Rev 4.4	Total/NA
Sodium	169		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: WG-12595539-100422-KM-007 — Lab Sample ID: 480-202439-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	200		50	5.9	ug/L	10		624.1	Total/NA
1,2,4-Trichlorobenzene	170		50	3.9	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	540		50	5.4	ug/L	10		624.1	Total/NA
Benzene	190		50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	420		50	4.8	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene	690		50	5.7	ug/L	10		624.1	Total/NA
Tetrachloroethene	260		50	3.4	ug/L	10		624.1	Total/NA
Toluene	83		50	4.5	ug/L	10		624.1	Total/NA
Trichloroethene	460		50	6.0	ug/L	10		624.1	Total/NA
Vinyl chloride	31	J	50	7.5	ug/L	10		624.1	Total/NA
4-Chlorotoluene	530		50	2.7	ug/L	10		624.1	Total/NA
1,2-Dichlorobenzene - DL	2100		200	18	ug/L	40		624.1	Total/NA
1,4-Dichlorobenzene - DL	1200		200	20	ug/L	40		624.1	Total/NA
2-Chlorotoluene - DL	1300		200	13	ug/L	40		624.1	Total/NA
1,4-Dioxane	15		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Arsenic	0.051		0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	4.8		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	886	^2	2.5	0.50	mg/L	5		200.7 Rev 4.4	Total/NA
Sodium	167		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA
Phenolics, Total Recoverable	0.030		0.010	0.0035	mg/L	1		420.4	Total/NA

Client Sample ID: WG-12595539-100422-KM-008 — Lab Sample ID: 480-202439-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	31	J	50	5.9	ug/L	10		624.1	Total/NA
1,2,4-Trichlorobenzene	4.3	J	50	3.9	ug/L	10		624.1	Total/NA
1,2-Dichlorobenzene	30	J	50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	85		50	5.4	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene	250		50	5.1	ug/L	10		624.1	Total/NA
Benzene	77		50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	390		50	4.8	ug/L	10		624.1	Total/NA
2-Chlorotoluene	280		50	3.3	ug/L	10		624.1	Total/NA
4-Chlorotoluene	26	J	50	2.7	ug/L	10		624.1	Total/NA
1,4-Dioxane	9.9		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA

This Detection Summary does not include radiochemical test results.

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Client Sample ID: WG-12595539-100422-KM-008 (Continued) — Lab Sample ID: 480-202439-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.012	J	0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	0.19		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	701		2.5	0.50	mg/L	5		200.7 Rev 4.4	Total/NA
Sodium	179		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA
Phenolics, Total Recoverable	0.0074	J	0.010	0.0035	mg/L	1		420.4	Total/NA

Client Sample ID: WG-12595539-100422-KM-009 — Lab Sample ID: 480-202439-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichlorobenzene	96		50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	210		50	5.4	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene	340		50	5.1	ug/L	10		624.1	Total/NA
Benzene	11	J	50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	780		50	4.8	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene	13	J	50	5.7	ug/L	10		624.1	Total/NA
Tetrachloroethene	7.1	J	50	3.4	ug/L	10		624.1	Total/NA
Trichloroethene	10	J	50	6.0	ug/L	10		624.1	Total/NA
2-Chlorotoluene	39	J	50	3.3	ug/L	10		624.1	Total/NA
4-Chlorotoluene	6.3	J	50	2.7	ug/L	10		624.1	Total/NA
Arsenic	0.0065	J	0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	0.37		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	156	^2	0.50	0.10	mg/L	1		200.7 Rev 4.4	Total/NA
Sodium	85.8		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: WG-12595539-100522-KM-010 — Lab Sample ID: 480-202439-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichlorobenzene	8.7		5.0	0.44	ug/L	1		624.1	Total/NA
1,3-Dichlorobenzene	10		5.0	0.54	ug/L	1		624.1	Total/NA
1,4-Dichlorobenzene	48		5.0	0.51	ug/L	1		624.1	Total/NA
Chlorobenzene	19		5.0	0.48	ug/L	1		624.1	Total/NA
2-Chlorotoluene	5.0		5.0	0.33	ug/L	1		624.1	Total/NA
4-Chlorotoluene	0.49	J	5.0	0.27	ug/L	1		624.1	Total/NA

Client Sample ID: WG-12595539-100422-KM-011 — Lab Sample ID: 480-202439-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichlorobenzene	90		50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	190		50	5.4	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene	320		50	5.1	ug/L	10		624.1	Total/NA
Benzene	11	J	50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	740		50	4.8	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene	12	J	50	5.7	ug/L	10		624.1	Total/NA
Tetrachloroethene	6.9	J	50	3.4	ug/L	10		624.1	Total/NA
Trichloroethene	11	J	50	6.0	ug/L	10		624.1	Total/NA
2-Chlorotoluene	38	J	50	3.3	ug/L	10		624.1	Total/NA
4-Chlorotoluene	5.9	J	50	2.7	ug/L	10		624.1	Total/NA
Iron	0.37		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	157	^2	0.50	0.10	mg/L	1		200.7 Rev 4.4	Total/NA
Sodium	86.0		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Client Sample ID: WG-12595539-100522-KM-012 — Lab Sample ID: 480-202439-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	32	J	50	5.9	ug/L	10		624.1	Total/NA
Benzene	12	J	50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	7.7	J	50	4.8	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene	14	J	50	5.7	ug/L	10		624.1	Total/NA
Vinyl chloride	750		50	7.5	ug/L	10		624.1	Total/NA
Arsenic	0.011	J	0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	7.1		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	253	^2	0.50	0.10	mg/L	1		200.7 Rev 4.4	Total/NA
Sodium	41.1		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: WG-12595539-100522-KM-013 — Lab Sample ID: 480-202439-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichlorobenzene	170		50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	530		50	5.4	ug/L	10		624.1	Total/NA
Benzene	35	J	50	6.0	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene	20	J	50	5.7	ug/L	10		624.1	Total/NA
Trichloroethene	9.5	J	50	6.0	ug/L	10		624.1	Total/NA
Vinyl chloride	13	J	50	7.5	ug/L	10		624.1	Total/NA
2-Chlorotoluene	230		50	3.3	ug/L	10		624.1	Total/NA
4-Chlorotoluene	18	J	50	2.7	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene - DL	1700		250	25	ug/L	50		624.1	Total/NA
Chlorobenzene - DL	2800		250	24	ug/L	50		624.1	Total/NA
Iron	0.99		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	103	^2	0.50	0.10	mg/L	1		200.7 Rev 4.4	Total/NA
Sodium	76.2		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: WG-12595539-100522-KM-014 — Lab Sample ID: 480-202439-9

No Detections.

Client Sample ID: WG-12595539-100522-KM-015 — Lab Sample ID: 480-202439-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichlorobenzene	5.7	J	20	1.8	ug/L	4		624.1	Total/NA
1,3-Dichlorobenzene	31		20	2.2	ug/L	4		624.1	Total/NA
1,4-Dichlorobenzene	60		20	2.0	ug/L	4		624.1	Total/NA
Chlorobenzene	150		20	1.9	ug/L	4		624.1	Total/NA
2-Chlorotoluene	33		20	1.3	ug/L	4		624.1	Total/NA
3-Chlorotoluene	1.2	J	20	1.2	ug/L	4		624.1	Total/NA

Client Sample ID: WG-12595539-100622-KM-016 — Lab Sample ID: 480-202439-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	15	J	50	5.9	ug/L	10		624.1	Total/NA
1,2-Dichlorobenzene	30	J	50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	47	J	50	5.4	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene	42	J	50	5.1	ug/L	10		624.1	Total/NA
Benzene	200		50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	130		50	4.8	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene	120		50	5.7	ug/L	10		624.1	Total/NA
Toluene	14	J	50	4.5	ug/L	10		624.1	Total/NA
Vinyl chloride	240		50	7.5	ug/L	10		624.1	Total/NA

This Detection Summary does not include radiochemical test results.

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Client Sample ID: WG-12595539-100622-KM-016 (Continued) — Lab Sample ID: 480-202439-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Chlorotoluene	36	J	50	3.3	ug/L	10		624.1	Total/NA
4-Chlorotoluene	9.1	J	50	2.7	ug/L	10		624.1	Total/NA
1,4-Dioxane	4.6		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Arsenic	0.012	J	0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	0.15		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	3240		5.0	1.0	mg/L	10		200.7 Rev 4.4	Total/NA
Sodium	226		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA
Phenolics, Total Recoverable	0.014		0.010	0.0035	mg/L	1		420.4	Total/NA

Client Sample ID: WG-12595539-100522-KM-017 — Lab Sample ID: 480-202439-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	63		50	5.9	ug/L	10		624.1	Total/NA
1,2,4-Trichlorobenzene	6.5	J	50	3.9	ug/L	10		624.1	Total/NA
1,2-Dichlorobenzene	30	J	50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	44	J	50	5.4	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene	22	J	50	5.1	ug/L	10		624.1	Total/NA
Benzene	46	J	50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	190		50	4.8	ug/L	10		624.1	Total/NA
Toluene	490		50	4.5	ug/L	10		624.1	Total/NA
2-Chlorotoluene	370		50	3.3	ug/L	10		624.1	Total/NA
4-Chlorotoluene	39	J	50	2.7	ug/L	10		624.1	Total/NA
cis-1,2-Dichloroethene - DL	47000		10000	1100	ug/L	2000		624.1	Total/NA
Tetrachloroethene - DL	80000		10000	680	ug/L	2000		624.1	Total/NA
Vinyl chloride - DL	13000		10000	1500	ug/L	2000		624.1	Total/NA
Arsenic	0.020		0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	0.62		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	477	^2	0.50	0.10	mg/L	1		200.7 Rev 4.4	Total/NA
Sodium	151		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA
Phenolics, Total Recoverable	0.019		0.010	0.0035	mg/L	1		420.4	Total/NA

Client Sample ID: WG-12595539-100622-KM-018 — Lab Sample ID: 480-202439-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	6.5	J	50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	6.9	J	50	4.8	ug/L	10		624.1	Total/NA
Tetrachloroethene	58		50	3.4	ug/L	10		624.1	Total/NA
Trichloroethene	25	J	50	6.0	ug/L	10		624.1	Total/NA
Arsenic	0.0061	J	0.015	0.0056	mg/L	1		200.7 Rev 4.4	Total/NA
Iron	0.15		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	2400		5.0	1.0	mg/L	10		200.7 Rev 4.4	Total/NA
Sodium	201		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA
Phenolics, Total Recoverable	0.0047	J	0.010	0.0035	mg/L	1		420.4	Total/NA

Client Sample ID: WG-12595539-100522-KM-019 — Lab Sample ID: 480-202439-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichlorobenzene	14	J	50	4.4	ug/L	10		624.1	Total/NA
1,3-Dichlorobenzene	110		50	5.4	ug/L	10		624.1	Total/NA
1,4-Dichlorobenzene	270		50	5.1	ug/L	10		624.1	Total/NA
Benzene	9.9	J	50	6.0	ug/L	10		624.1	Total/NA
Chlorobenzene	680		50	4.8	ug/L	10		624.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: WG-12595539-100522-KM-019 (Continued) — Lab Sample ID: 480-202439-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	62		50	5.7	ug/L	10		624.1	Total/NA
Tetrachloroethene	65		50	3.4	ug/L	10		624.1	Total/NA
Trichloroethene	130		50	6.0	ug/L	10		624.1	Total/NA
Vinyl chloride	31	J	50	7.5	ug/L	10		624.1	Total/NA
2-Chlorotoluene	330		50	3.3	ug/L	10		624.1	Total/NA
Iron	1.7		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	94.7	^2	0.50	0.10	mg/L	1		200.7 Rev 4.4	Total/NA
Sodium	102		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: WG-12595539-100622-KM-020 — Lab Sample ID: 480-202439-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	3.2	J	10	1.0	ug/L	2		624.1	Total/NA
Chlorobenzene	3.1	J	10	0.95	ug/L	2		624.1	Total/NA
cis-1,2-Dichloroethene	19		10	1.1	ug/L	2		624.1	Total/NA
Vinyl chloride	5.0	J	10	1.5	ug/L	2		624.1	Total/NA
2-Chlorotoluene	84		10	0.66	ug/L	2		624.1	Total/NA
1,4-Dioxane	1.2		0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
Iron	0.41		0.050	0.019	mg/L	1		200.7 Rev 4.4	Total/NA
Potassium	27.3	^2	0.50	0.10	mg/L	1		200.7 Rev 4.4	Total/NA
Sodium	135		1.0	0.32	mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: TB-12595539-100422 — Lab Sample ID: 480-202439-16

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: WG-12595539-100422-KM-006

Lab Sample ID: 480-202439-1
Date Collected: 10/04/22 11:22
Matrix: Water
Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**27**	**J**	50	5.9	ug/L			10/07/22 17:20	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 17:20	10
1,2-Dichlorobenzene	**36**	**J**	50	4.4	ug/L			10/07/22 17:20	10
1,3-Dichlorobenzene	**140**		50	5.4	ug/L			10/07/22 17:20	10
1,4-Dichlorobenzene	**200**		50	5.1	ug/L			10/07/22 17:20	10
Acetone	ND	*+	250	20	ug/L			10/07/22 17:20	10
Benzene	ND		50	6.0	ug/L			10/07/22 17:20	10
Chlorobenzene	**310**		50	4.8	ug/L			10/07/22 17:20	10
cis-1,2-Dichloroethene	**8.6**	**J**	50	5.7	ug/L			10/07/22 17:20	10
Tetrachloroethene	ND		50	3.4	ug/L			10/07/22 17:20	10
Toluene	ND		50	4.5	ug/L			10/07/22 17:20	10
Trichloroethene	ND		50	6.0	ug/L			10/07/22 17:20	10
Vinyl chloride	**8.8**	**J**	50	7.5	ug/L			10/07/22 17:20	10
2-Chlorotoluene	**210**	**F1**	50	3.3	ug/L			10/07/22 17:20	10
4-Chlorotoluene	**6.2**	**J**	50	2.7	ug/L			10/07/22 17:20	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 17:20	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*68 - 130*		*10/07/22 17:20*	*10*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/07/22 17:20*	*10*
Toluene-d8 (Surr)	*99*		*77 - 120*		*10/07/22 17:20*	*10*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/07/22 17:20*	*10*

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	**8.6**		0.20	0.10	ug/L		10/10/22 08:56	10/11/22 16:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*36*		*15 - 110*	*10/10/22 08:56*	*10/11/22 16:20*	*1*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.015**		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 18:52	1
Iron	**0.80**		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 17:55	1
Potassium	**906**	**^2**	2.5	0.50	mg/L		10/10/22 09:29	10/11/22 19:56	5
Sodium	**169**		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 18:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	ND		0.010	0.0035	mg/L			10/10/22 13:03	1

Client Sample ID: WG-12595539-100422-KM-007

Lab Sample ID: 480-202439-2
Date Collected: 10/04/22 11:40
Matrix: Water
Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**200**		50	5.9	ug/L			10/07/22 17:44	10
1,2,4-Trichlorobenzene	**170**		50	3.9	ug/L			10/07/22 17:44	10
1,3-Dichlorobenzene	**540**		50	5.4	ug/L			10/07/22 17:44	10
Acetone	ND	*+	250	20	ug/L			10/07/22 17:44	10

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Client Sample ID: WG-12595539-100422-KM-007
Date Collected: 10/04/22 11:40
Date Received: 10/06/22 14:37

Lab Sample ID: 480-202439-2
Matrix: Water

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	190		50	6.0	ug/L			10/07/22 17:44	10
Chlorobenzene	420		50	4.8	ug/L			10/07/22 17:44	10
cis-1,2-Dichloroethene	690		50	5.7	ug/L			10/07/22 17:44	10
Tetrachloroethene	260		50	3.4	ug/L			10/07/22 17:44	10
Toluene	83		50	4.5	ug/L			10/07/22 17:44	10
Trichloroethene	460		50	6.0	ug/L			10/07/22 17:44	10
Vinyl chloride	31	J	50	7.5	ug/L			10/07/22 17:44	10
4-Chlorotoluene	530		50	2.7	ug/L			10/07/22 17:44	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 17:44	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*68 - 130*		*10/07/22 17:44*	*10*
4-Bromofluorobenzene (Surr)	*102*		*76 - 123*		*10/07/22 17:44*	*10*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/07/22 17:44*	*10*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/07/22 17:44*	*10*

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	2100		200	18	ug/L			10/10/22 13:28	40
1,4-Dichlorobenzene	1200		200	20	ug/L			10/10/22 13:28	40
2-Chlorotoluene	1300		200	13	ug/L			10/10/22 13:28	40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*68 - 130*		*10/10/22 13:28*	*40*
4-Bromofluorobenzene (Surr)	*99*		*76 - 123*		*10/10/22 13:28*	*40*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/10/22 13:28*	*40*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/10/22 13:28*	*40*

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	15		0.20	0.10	ug/L		10/10/22 08:56	10/11/22 19:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*38*		*15 - 110*	*10/10/22 08:56*	*10/11/22 19:42*	*1*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.051		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:12	1
Iron	4.8		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 18:26	1
Potassium	886	^2	2.5	0.50	mg/L		10/10/22 09:29	10/11/22 20:15	5
Sodium	167		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	0.030		0.010	0.0035	mg/L			10/10/22 12:39	1

Client Sample ID: WG-12595539-100422-KM-008

Lab Sample ID: 480-202439-3
Date Collected: 10/04/22 13:08
Matrix: Water
Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	31	J	50	5.9	ug/L			10/07/22 18:08	10
1,2,4-Trichlorobenzene	4.3	J	50	3.9	ug/L			10/07/22 18:08	10
1,2-Dichlorobenzene	30	J	50	4.4	ug/L			10/07/22 18:08	10
1,3-Dichlorobenzene	85		50	5.4	ug/L			10/07/22 18:08	10
1,4-Dichlorobenzene	250		50	5.1	ug/L			10/07/22 18:08	10
Acetone	ND	*+	250	20	ug/L			10/07/22 18:08	10
Benzene	77		50	6.0	ug/L			10/07/22 18:08	10
Chlorobenzene	390		50	4.8	ug/L			10/07/22 18:08	10
cis-1,2-Dichloroethene	ND		50	5.7	ug/L			10/07/22 18:08	10
Tetrachloroethene	ND		50	3.4	ug/L			10/07/22 18:08	10
Toluene	ND		50	4.5	ug/L			10/07/22 18:08	10
Trichloroethene	ND		50	6.0	ug/L			10/07/22 18:08	10
Vinyl chloride	ND		50	7.5	ug/L			10/07/22 18:08	10
2-Chlorotoluene	280		50	3.3	ug/L			10/07/22 18:08	10
4-Chlorotoluene	26	J	50	2.7	ug/L			10/07/22 18:08	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 18:08	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*68 - 130*		*10/07/22 18:08*	*10*
4-Bromofluorobenzene (Surr)	*99*		*76 - 123*		*10/07/22 18:08*	*10*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/07/22 18:08*	*10*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*10/07/22 18:08*	*10*

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	9.9		0.20	0.10	ug/L		10/10/22 08:56	10/11/22 20:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*31*		*15 - 110*	*10/10/22 08:56*	*10/11/22 20:04*	*1*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.012	J	0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:38	1
Iron	0.19		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 18:41	1
Potassium	701		2.5	0.50	mg/L		10/10/22 09:29	10/11/22 20:30	5
Sodium	179		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	0.0074	J	0.010	0.0035	mg/L			10/10/22 12:43	1

Client Sample ID: WG-12595539-100422-KM-009

Lab Sample ID: 480-202439-4
Date Collected: 10/04/22 13:35
Matrix: Water
Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		50	5.9	ug/L			10/07/22 18:32	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 18:32	10
1,2-Dichlorobenzene	96		50	4.4	ug/L			10/07/22 18:32	10
1,3-Dichlorobenzene	210		50	5.4	ug/L			10/07/22 18:32	10

Client Sample ID: WG-12595539-100422-KM-009

Lab Sample ID: 480-202439-4

Date Collected: 10/04/22 13:35

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	**340**		50	5.1	ug/L			10/07/22 18:32	10
Acetone	ND	*+	250	20	ug/L			10/07/22 18:32	10
Benzene	**11**	**J**	50	6.0	ug/L			10/07/22 18:32	10
Chlorobenzene	**780**		50	4.8	ug/L			10/07/22 18:32	10
cis-1,2-Dichloroethene	**13**	**J**	50	5.7	ug/L			10/07/22 18:32	10
Tetrachloroethene	**7.1**	**J**	50	3.4	ug/L			10/07/22 18:32	10
Toluene	ND		50	4.5	ug/L			10/07/22 18:32	10
Trichloroethene	**10**	**J**	50	6.0	ug/L			10/07/22 18:32	10
Vinyl chloride	ND		50	7.5	ug/L			10/07/22 18:32	10
2-Chlorotoluene	**39**	**J**	50	3.3	ug/L			10/07/22 18:32	10
4-Chlorotoluene	**6.3**	**J**	50	2.7	ug/L			10/07/22 18:32	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 18:32	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*68 - 130*		*10/07/22 18:32*	*10*
4-Bromofluorobenzene (Surr)	*102*		*76 - 123*		*10/07/22 18:32*	*10*
Toluene-d8 (Surr)	*99*		*77 - 120*		*10/07/22 18:32*	*10*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*10/07/22 18:32*	*10*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0065**	**J**	0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:27	1
Iron	**0.37**		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 18:30	1
Potassium	**156**	**^2**	0.50	0.10	mg/L		10/10/22 09:29	10/10/22 19:27	1
Sodium	**85.8**		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	ND		0.010	0.0035	mg/L			10/10/22 13:12	1

Client Sample ID: WG-12595539-100522-KM-010

Lab Sample ID: 480-202439-5

Date Collected: 10/05/22 10:10

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.39	ug/L			10/10/22 13:52	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.26	ug/L			10/10/22 13:52	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	0.36	ug/L			10/10/22 13:52	1
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L			10/10/22 13:52	1
1,1-Dichloroethane	ND		5.0	0.59	ug/L			10/10/22 13:52	1
1,1-Dichloroethene	ND		5.0	0.85	ug/L			10/10/22 13:52	1
1,2,4-Trichlorobenzene	ND		5.0	0.39	ug/L			10/10/22 13:52	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.62	ug/L			10/10/22 13:52	1
1,2-Dichlorobenzene	**8.7**		5.0	0.44	ug/L			10/10/22 13:52	1
1,2-Dichloroethane	ND		5.0	0.60	ug/L			10/10/22 13:52	1
1,2-Dichloropropane	ND		5.0	0.61	ug/L			10/10/22 13:52	1
1,3-Dichlorobenzene	**10**		5.0	0.54	ug/L			10/10/22 13:52	1
1,4-Dichlorobenzene	**48**		5.0	0.51	ug/L			10/10/22 13:52	1
2-Butanone (MEK)	ND		25	1.8	ug/L			10/10/22 13:52	1

Client Sample ID: WG-12595539-100522-KM-010

Lab Sample ID: 480-202439-5

Date Collected: 10/05/22 10:10

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		25	2.0	ug/L			10/10/22 13:52	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.3	ug/L			10/10/22 13:52	1
Acetone	ND		25	2.0	ug/L			10/10/22 13:52	1
Benzene	ND		5.0	0.60	ug/L			10/10/22 13:52	1
Bromoform	ND		5.0	0.47	ug/L			10/10/22 13:52	1
Bromomethane	ND		5.0	1.2	ug/L			10/10/22 13:52	1
Carbon disulfide	ND		5.0	0.29	ug/L			10/10/22 13:52	1
Carbon tetrachloride	ND		5.0	0.51	ug/L			10/10/22 13:52	1
Chlorobenzene	**19**		5.0	0.48	ug/L			10/10/22 13:52	1
Dibromochloromethane	ND		5.0	0.41	ug/L			10/10/22 13:52	1
Chloroethane	ND		5.0	0.87	ug/L			10/10/22 13:52	1
Chloroform	ND		5.0	0.54	ug/L			10/10/22 13:52	1
Chloromethane	ND		5.0	0.64	ug/L			10/10/22 13:52	1
cis-1,2-Dichloroethene	ND		5.0	0.57	ug/L			10/10/22 13:52	1
Bromodichloromethane	ND		5.0	0.54	ug/L			10/10/22 13:52	1
Dichlorodifluoromethane	ND		5.0	0.28	ug/L			10/10/22 13:52	1
Ethylbenzene	ND		5.0	0.46	ug/L			10/10/22 13:52	1
1,2-Dibromoethane	ND		5.0	0.50	ug/L			10/10/22 13:52	1
Isopropylbenzene	ND		5.0	0.51	ug/L			10/10/22 13:52	1
2-Chlorotoluene	**5.0**		5.0	0.33	ug/L			10/10/22 13:52	1
Methyl tert-butyl ether	ND		5.0	0.35	ug/L			10/10/22 13:52	1
4-Chlorotoluene	**0.49**	**J**	5.0	0.27	ug/L			10/10/22 13:52	1
Methylene Chloride	ND		5.0	0.81	ug/L			10/10/22 13:52	1
3-Chlorotoluene	ND		5.0	0.31	ug/L			10/10/22 13:52	1
Tetrachloroethene	ND		5.0	0.34	ug/L			10/10/22 13:52	1
Toluene	ND		5.0	0.45	ug/L			10/10/22 13:52	1
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L			10/10/22 13:52	1
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L			10/10/22 13:52	1
Trichloroethene	ND		5.0	0.60	ug/L			10/10/22 13:52	1
Trichlorofluoromethane	ND		5.0	0.45	ug/L			10/10/22 13:52	1
Vinyl chloride	ND		5.0	0.75	ug/L			10/10/22 13:52	1
Xylenes, Total	ND		10	1.1	ug/L			10/10/22 13:52	1
cis-1,3-Dichloropropene	ND		5.0	0.33	ug/L			10/10/22 13:52	1
Styrene	ND		5.0	0.38	ug/L			10/10/22 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*68 - 130*		*10/10/22 13:52*	*1*
4-Bromofluorobenzene (Surr)	*101*		*76 - 123*		*10/10/22 13:52*	*1*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/10/22 13:52*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 123*		*10/10/22 13:52*	*1*

Client Sample ID: WG-12595539-100422-KM-011

Lab Sample ID: 480-202439-6

Date Collected: 10/04/22 13:35

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		50	5.9	ug/L			10/07/22 19:20	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 19:20	10
1,2-Dichlorobenzene	**90**		50	4.4	ug/L			10/07/22 19:20	10

Client Sample ID: WG-12595539-100422-KM-011

Lab Sample ID: 480-202439-6

Date Collected: 10/04/22 13:35

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	190		50	5.4	ug/L			10/07/22 19:20	10
1,4-Dichlorobenzene	320		50	5.1	ug/L			10/07/22 19:20	10
Acetone	ND	*+	250	20	ug/L			10/07/22 19:20	10
Benzene	11	J	50	6.0	ug/L			10/07/22 19:20	10
Chlorobenzene	740		50	4.8	ug/L			10/07/22 19:20	10
cis-1,2-Dichloroethene	12	J	50	5.7	ug/L			10/07/22 19:20	10
Tetrachloroethene	6.9	J	50	3.4	ug/L			10/07/22 19:20	10
Toluene	ND		50	4.5	ug/L			10/07/22 19:20	10
Trichloroethene	11	J	50	6.0	ug/L			10/07/22 19:20	10
Vinyl chloride	ND		50	7.5	ug/L			10/07/22 19:20	10
2-Chlorotoluene	38	J	50	3.3	ug/L			10/07/22 19:20	10
4-Chlorotoluene	5.9	J	50	2.7	ug/L			10/07/22 19:20	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 19:20	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*68 - 130*		*10/07/22 19:20*	*10*
4-Bromofluorobenzene (Surr)	*101*		*76 - 123*		*10/07/22 19:20*	*10*
Toluene-d8 (Surr)	*99*		*77 - 120*		*10/07/22 19:20*	*10*
Dibromofluoromethane (Surr)	*103*		*75 - 123*		*10/07/22 19:20*	*10*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:42	1
Iron	0.37		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 18:57	1
Potassium	157	^2	0.50	0.10	mg/L		10/10/22 09:29	10/10/22 19:42	1
Sodium	86.0		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	ND		0.010	0.0035	mg/L			10/10/22 13:16	1

Client Sample ID: WG-12595539-100522-KM-012

Lab Sample ID: 480-202439-7

Date Collected: 10/05/22 12:04

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	32	J	50	5.9	ug/L			10/07/22 19:44	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 19:44	10
1,2-Dichlorobenzene	ND		50	4.4	ug/L			10/07/22 19:44	10
1,3-Dichlorobenzene	ND		50	5.4	ug/L			10/07/22 19:44	10
1,4-Dichlorobenzene	ND		50	5.1	ug/L			10/07/22 19:44	10
Acetone	ND	*+	250	20	ug/L			10/07/22 19:44	10
Benzene	12	J	50	6.0	ug/L			10/07/22 19:44	10
Chlorobenzene	7.7	J	50	4.8	ug/L			10/07/22 19:44	10
cis-1,2-Dichloroethene	14	J	50	5.7	ug/L			10/07/22 19:44	10
Tetrachloroethene	ND		50	3.4	ug/L			10/07/22 19:44	10
Toluene	ND		50	4.5	ug/L			10/07/22 19:44	10
Trichloroethene	ND		50	6.0	ug/L			10/07/22 19:44	10
Vinyl chloride	750		50	7.5	ug/L			10/07/22 19:44	10

Client Sample ID: WG-12595539-100522-KM-012

Lab Sample ID: 480-202439-7

Date Collected: 10/05/22 12:04

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chlorotoluene	ND		50	3.3	ug/L			10/07/22 19:44	10
4-Chlorotoluene	ND		50	2.7	ug/L			10/07/22 19:44	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 19:44	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*68 - 130*		*10/07/22 19:44*	*10*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/07/22 19:44*	*10*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/07/22 19:44*	*10*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/07/22 19:44*	*10*

Method: EPA 551.1 - Chlorinated Disinfection Byproducts and Solvents (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloropicrin	ND		0.51	0.51	ug/L		10/10/22 09:09	10/12/22 06:20	1

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.011**	**J**	0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:46	1
Iron	**7.1**		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 19:01	1
Potassium	**253**	**^2**	0.50	0.10	mg/L		10/10/22 09:29	10/10/22 19:46	1
Sodium	**41.1**		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	ND		0.010	0.0035	mg/L			10/10/22 13:20	1

Client Sample ID: WG-12595539-100522-KM-013

Lab Sample ID: 480-202439-8

Date Collected: 10/05/22 09:25

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		50	5.9	ug/L			10/07/22 20:07	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 20:07	10
1,2-Dichlorobenzene	**170**		50	4.4	ug/L			10/07/22 20:07	10
1,3-Dichlorobenzene	**530**		50	5.4	ug/L			10/07/22 20:07	10
Acetone	ND	*+	250	20	ug/L			10/07/22 20:07	10
Benzene	**35**	**J**	50	6.0	ug/L			10/07/22 20:07	10
cis-1,2-Dichloroethene	**20**	**J**	50	5.7	ug/L			10/07/22 20:07	10
Tetrachloroethene	ND		50	3.4	ug/L			10/07/22 20:07	10
Toluene	ND		50	4.5	ug/L			10/07/22 20:07	10
Trichloroethene	**9.5**	**J**	50	6.0	ug/L			10/07/22 20:07	10
Vinyl chloride	**13**	**J**	50	7.5	ug/L			10/07/22 20:07	10
2-Chlorotoluene	**230**		50	3.3	ug/L			10/07/22 20:07	10
4-Chlorotoluene	**18**	**J**	50	2.7	ug/L			10/07/22 20:07	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 20:07	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*68 - 130*		*10/07/22 20:07*	*10*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/07/22 20:07*	*10*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/07/22 20:07*	*10*

Client Sample ID: WG-12595539-100522-KM-013

Lab Sample ID: 480-202439-8

Date Collected: 10/05/22 09:25
Matrix: Water
Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/07/22 20:07*	*10*

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	**1700**		250	25	ug/L			10/10/22 14:16	50
Chlorobenzene	**2800**		250	24	ug/L			10/10/22 14:16	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*68 - 130*		*10/10/22 14:16*	*50*
4-Bromofluorobenzene (Surr)	*99*		*76 - 123*		*10/10/22 14:16*	*50*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/10/22 14:16*	*50*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*10/10/22 14:16*	*50*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:50	1
Iron	**0.99**		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 19:05	1
Potassium	**103**	**^2**	0.50	0.10	mg/L		10/10/22 09:29	10/10/22 19:50	1
Sodium	**76.2**		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	ND		0.010	0.0035	mg/L			10/10/22 13:23	1

Client Sample ID: WG-12595539-100522-KM-014

Lab Sample ID: 480-202439-9

Date Collected: 10/05/22 13:38
Matrix: Water
Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.39	ug/L			10/10/22 14:40	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.26	ug/L			10/10/22 14:40	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	0.36	ug/L			10/10/22 14:40	1
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L			10/10/22 14:40	1
1,1-Dichloroethane	ND		5.0	0.59	ug/L			10/10/22 14:40	1
1,1-Dichloroethene	ND		5.0	0.85	ug/L			10/10/22 14:40	1
1,2,4-Trichlorobenzene	ND		5.0	0.39	ug/L			10/10/22 14:40	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.62	ug/L			10/10/22 14:40	1
1,2-Dichlorobenzene	ND		5.0	0.44	ug/L			10/10/22 14:40	1
1,2-Dichloroethane	ND		5.0	0.60	ug/L			10/10/22 14:40	1
1,2-Dichloropropane	ND		5.0	0.61	ug/L			10/10/22 14:40	1
1,3-Dichlorobenzene	ND		5.0	0.54	ug/L			10/10/22 14:40	1
1,4-Dichlorobenzene	ND		5.0	0.51	ug/L			10/10/22 14:40	1
2-Butanone (MEK)	ND		25	1.8	ug/L			10/10/22 14:40	1
2-Hexanone	ND		25	2.0	ug/L			10/10/22 14:40	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.3	ug/L			10/10/22 14:40	1
Acetone	ND		25	2.0	ug/L			10/10/22 14:40	1
Benzene	ND		5.0	0.60	ug/L			10/10/22 14:40	1
Bromoform	ND		5.0	0.47	ug/L			10/10/22 14:40	1
Bromomethane	ND		5.0	1.2	ug/L			10/10/22 14:40	1

Client Sample ID: WG-12595539-100522-KM-014

Lab Sample ID: 480-202439-9

Date Collected: 10/05/22 13:38

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	ND		5.0	0.29	ug/L			10/10/22 14:40	1
Carbon tetrachloride	ND		5.0	0.51	ug/L			10/10/22 14:40	1
Chlorobenzene	ND		5.0	0.48	ug/L			10/10/22 14:40	1
Dibromochloromethane	ND		5.0	0.41	ug/L			10/10/22 14:40	1
Chloroethane	ND		5.0	0.87	ug/L			10/10/22 14:40	1
Chloroform	ND		5.0	0.54	ug/L			10/10/22 14:40	1
Chloromethane	ND		5.0	0.64	ug/L			10/10/22 14:40	1
cis-1,2-Dichloroethene	ND		5.0	0.57	ug/L			10/10/22 14:40	1
Bromodichloromethane	ND		5.0	0.54	ug/L			10/10/22 14:40	1
Dichlorodifluoromethane	ND		5.0	0.28	ug/L			10/10/22 14:40	1
Ethylbenzene	ND		5.0	0.46	ug/L			10/10/22 14:40	1
1,2-Dibromoethane	ND		5.0	0.50	ug/L			10/10/22 14:40	1
Isopropylbenzene	ND		5.0	0.51	ug/L			10/10/22 14:40	1
2-Chlorotoluene	ND		5.0	0.33	ug/L			10/10/22 14:40	1
Methyl tert-butyl ether	ND		5.0	0.35	ug/L			10/10/22 14:40	1
4-Chlorotoluene	ND		5.0	0.27	ug/L			10/10/22 14:40	1
Methylene Chloride	ND		5.0	0.81	ug/L			10/10/22 14:40	1
3-Chlorotoluene	ND		5.0	0.31	ug/L			10/10/22 14:40	1
Tetrachloroethene	ND		5.0	0.34	ug/L			10/10/22 14:40	1
Toluene	ND		5.0	0.45	ug/L			10/10/22 14:40	1
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L			10/10/22 14:40	1
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L			10/10/22 14:40	1
Trichloroethene	ND		5.0	0.60	ug/L			10/10/22 14:40	1
Trichlorofluoromethane	ND		5.0	0.45	ug/L			10/10/22 14:40	1
Vinyl chloride	ND		5.0	0.75	ug/L			10/10/22 14:40	1
Xylenes, Total	ND		10	1.1	ug/L			10/10/22 14:40	1
cis-1,3-Dichloropropene	ND		5.0	0.33	ug/L			10/10/22 14:40	1
Styrene	ND		5.0	0.38	ug/L			10/10/22 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*68 - 130*		*10/10/22 14:40*	*1*
4-Bromofluorobenzene (Surr)	*101*		*76 - 123*		*10/10/22 14:40*	*1*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/10/22 14:40*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 123*		*10/10/22 14:40*	*1*

Client Sample ID: WG-12595539-100522-KM-015

Lab Sample ID: 480-202439-10

Date Collected: 10/05/22 10:55

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		20	1.5	ug/L			10/10/22 15:03	4
1,1,2,2-Tetrachloroethane	ND		20	1.0	ug/L			10/10/22 15:03	4
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20	1.5	ug/L			10/10/22 15:03	4
1,1,2-Trichloroethane	ND		20	1.9	ug/L			10/10/22 15:03	4
1,1-Dichloroethane	ND		20	2.4	ug/L			10/10/22 15:03	4
1,1-Dichloroethene	ND		20	3.4	ug/L			10/10/22 15:03	4
1,2,4-Trichlorobenzene	ND		20	1.6	ug/L			10/10/22 15:03	4
1,2-Dibromo-3-Chloropropane	ND		20	2.5	ug/L			10/10/22 15:03	4
1,2-Dichlorobenzene	**5.7**	**J**	20	1.8	ug/L			10/10/22 15:03	4

Client Sample ID: WG-12595539-100522-KM-015
Date Collected: 10/05/22 10:55
Date Received: 10/06/22 14:37

Lab Sample ID: 480-202439-10
Matrix: Water

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	ND		20	2.4	ug/L			10/10/22 15:03	4
1,2-Dichloropropane	ND		20	2.4	ug/L			10/10/22 15:03	4
1,3-Dichlorobenzene	**31**		20	2.2	ug/L			10/10/22 15:03	4
1,4-Dichlorobenzene	**60**		20	2.0	ug/L			10/10/22 15:03	4
2-Butanone (MEK)	ND		100	7.0	ug/L			10/10/22 15:03	4
2-Hexanone	ND		100	7.8	ug/L			10/10/22 15:03	4
4-Methyl-2-pentanone (MIBK)	ND		100	5.2	ug/L			10/10/22 15:03	4
Acetone	ND		100	7.9	ug/L			10/10/22 15:03	4
Benzene	ND		20	2.4	ug/L			10/10/22 15:03	4
Bromoform	ND		20	1.9	ug/L			10/10/22 15:03	4
Bromomethane	ND		20	4.8	ug/L			10/10/22 15:03	4
Carbon disulfide	ND		20	1.1	ug/L			10/10/22 15:03	4
Carbon tetrachloride	ND		20	2.0	ug/L			10/10/22 15:03	4
Chlorobenzene	**150**		20	1.9	ug/L			10/10/22 15:03	4
Dibromochloromethane	ND		20	1.7	ug/L			10/10/22 15:03	4
Chloroethane	ND		20	3.5	ug/L			10/10/22 15:03	4
Chloroform	ND		20	2.2	ug/L			10/10/22 15:03	4
Chloromethane	ND		20	2.5	ug/L			10/10/22 15:03	4
cis-1,2-Dichloroethene	ND		20	2.3	ug/L			10/10/22 15:03	4
Bromodichloromethane	ND		20	2.1	ug/L			10/10/22 15:03	4
Dichlorodifluoromethane	ND		20	1.1	ug/L			10/10/22 15:03	4
Ethylbenzene	ND		20	1.9	ug/L			10/10/22 15:03	4
1,2-Dibromoethane	ND		20	2.0	ug/L			10/10/22 15:03	4
Isopropylbenzene	ND		20	2.0	ug/L			10/10/22 15:03	4
2-Chlorotoluene	**33**		20	1.3	ug/L			10/10/22 15:03	4
Methyl tert-butyl ether	ND		20	1.4	ug/L			10/10/22 15:03	4
4-Chlorotoluene	ND		20	1.1	ug/L			10/10/22 15:03	4
Methylene Chloride	ND		20	3.3	ug/L			10/10/22 15:03	4
3-Chlorotoluene	**1.2**	**J**	20	1.2	ug/L			10/10/22 15:03	4
Tetrachloroethene	ND		20	1.4	ug/L			10/10/22 15:03	4
Toluene	ND		20	1.8	ug/L			10/10/22 15:03	4
trans-1,2-Dichloroethene	ND		20	2.4	ug/L			10/10/22 15:03	4
trans-1,3-Dichloropropene	ND		20	1.8	ug/L			10/10/22 15:03	4
Trichloroethene	ND		20	2.4	ug/L			10/10/22 15:03	4
Trichlorofluoromethane	ND		20	1.8	ug/L			10/10/22 15:03	4
Vinyl chloride	ND		20	3.0	ug/L			10/10/22 15:03	4
Xylenes, Total	ND		40	4.3	ug/L			10/10/22 15:03	4
cis-1,3-Dichloropropene	ND		20	1.3	ug/L			10/10/22 15:03	4
Styrene	ND		20	1.5	ug/L			10/10/22 15:03	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*68 - 130*		*10/10/22 15:03*	*4*
4-Bromofluorobenzene (Surr)	*98*		*76 - 123*		*10/10/22 15:03*	*4*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/10/22 15:03*	*4*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/10/22 15:03*	*4*

Client Sample ID: WG-12595539-100622-KM-016

Lab Sample ID: 480-202439-11

Date Collected: 10/06/22 10:10

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	15	J	50	5.9	ug/L			10/07/22 21:20	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 21:20	10
1,2-Dichlorobenzene	30	J	50	4.4	ug/L			10/07/22 21:20	10
1,3-Dichlorobenzene	47	J	50	5.4	ug/L			10/07/22 21:20	10
1,4-Dichlorobenzene	42	J	50	5.1	ug/L			10/07/22 21:20	10
Acetone	ND	*+	250	20	ug/L			10/07/22 21:20	10
Benzene	200		50	6.0	ug/L			10/07/22 21:20	10
Chlorobenzene	130		50	4.8	ug/L			10/07/22 21:20	10
cis-1,2-Dichloroethene	120		50	5.7	ug/L			10/07/22 21:20	10
Tetrachloroethene	ND		50	3.4	ug/L			10/07/22 21:20	10
Toluene	14	J	50	4.5	ug/L			10/07/22 21:20	10
Trichloroethene	ND		50	6.0	ug/L			10/07/22 21:20	10
Vinyl chloride	240		50	7.5	ug/L			10/07/22 21:20	10
2-Chlorotoluene	36	J	50	3.3	ug/L			10/07/22 21:20	10
4-Chlorotoluene	9.1	J	50	2.7	ug/L			10/07/22 21:20	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 21:20	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*68 - 130*		*10/07/22 21:20*	*10*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/07/22 21:20*	*10*
Toluene-d8 (Surr)	*99*		*77 - 120*		*10/07/22 21:20*	*10*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*10/07/22 21:20*	*10*

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	4.6		0.20	0.10	ug/L		10/10/22 08:56	10/11/22 20:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*33*		*15 - 110*	*10/10/22 08:56*	*10/11/22 20:26*	*1*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.012	J	0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:54	1
Iron	0.15		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 19:08	1
Potassium	3240		5.0	1.0	mg/L		10/10/22 09:29	10/11/22 20:34	10
Sodium	226		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	0.014		0.010	0.0035	mg/L			10/10/22 13:27	1

Client Sample ID: WG-12595539-100522-KM-017

Lab Sample ID: 480-202439-12

Date Collected: 10/05/22 12:20

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	63		50	5.9	ug/L			10/07/22 21:44	10
1,2,4-Trichlorobenzene	6.5	J	50	3.9	ug/L			10/07/22 21:44	10
1,2-Dichlorobenzene	30	J	50	4.4	ug/L			10/07/22 21:44	10
1,3-Dichlorobenzene	44	J	50	5.4	ug/L			10/07/22 21:44	10

Client Sample ID: WG-12595539-100522-KM-017

Lab Sample ID: 480-202439-12

Date Collected: 10/05/22 12:20

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	22	J	50	5.1	ug/L			10/07/22 21:44	10
Acetone	ND	*+	250	20	ug/L			10/07/22 21:44	10
Benzene	46	J	50	6.0	ug/L			10/07/22 21:44	10
Chlorobenzene	190		50	4.8	ug/L			10/07/22 21:44	10
Toluene	490		50	4.5	ug/L			10/07/22 21:44	10
Trichloroethene	ND		50	6.0	ug/L			10/07/22 21:44	10
2-Chlorotoluene	370		50	3.3	ug/L			10/07/22 21:44	10
4-Chlorotoluene	39	J	50	2.7	ug/L			10/07/22 21:44	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 21:44	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*68 - 130*		*10/07/22 21:44*	*10*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/07/22 21:44*	*10*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/07/22 21:44*	*10*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/07/22 21:44*	*10*

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	47000		10000	1100	ug/L			10/11/22 13:55	2000
Tetrachloroethene	80000		10000	680	ug/L			10/11/22 13:55	2000
Vinyl chloride	13000		10000	1500	ug/L			10/11/22 13:55	2000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*68 - 130*		*10/11/22 13:55*	*2000*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/11/22 13:55*	*2000*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/11/22 13:55*	*2000*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*10/11/22 13:55*	*2000*

Method: EPA 551.1 - Chlorinated Disinfection Byproducts and Solvents (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloropicrin	ND		0.52	0.52	ug/L		10/10/22 09:09	10/12/22 06:59	1

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.020		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 19:58	1
Iron	0.62		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 19:12	1
Potassium	477	^2	0.50	0.10	mg/L		10/10/22 09:29	10/10/22 19:58	1
Sodium	151		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 19:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	0.019		0.010	0.0035	mg/L			10/10/22 13:31	1

Client Sample ID: WG-12595539-100622-KM-018

Lab Sample ID: 480-202439-13

Date Collected: 10/06/22 12:00

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		50	5.9	ug/L			10/07/22 22:07	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 22:07	10

Client Sample ID: WG-12595539-100622-KM-018

Lab Sample ID: 480-202439-13

Date Collected: 10/06/22 12:00

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	ND		50	4.4	ug/L			10/07/22 22:07	10
1,3-Dichlorobenzene	ND		50	5.4	ug/L			10/07/22 22:07	10
1,4-Dichlorobenzene	ND		50	5.1	ug/L			10/07/22 22:07	10
Acetone	ND	*+	250	20	ug/L			10/07/22 22:07	10
Benzene	**6.5**	**J**	50	6.0	ug/L			10/07/22 22:07	10
Chlorobenzene	**6.9**	**J**	50	4.8	ug/L			10/07/22 22:07	10
cis-1,2-Dichloroethene	ND		50	5.7	ug/L			10/07/22 22:07	10
Tetrachloroethene	**58**		50	3.4	ug/L			10/07/22 22:07	10
Toluene	ND		50	4.5	ug/L			10/07/22 22:07	10
Trichloroethene	**25**	**J**	50	6.0	ug/L			10/07/22 22:07	10
Vinyl chloride	ND		50	7.5	ug/L			10/07/22 22:07	10
2-Chlorotoluene	ND		50	3.3	ug/L			10/07/22 22:07	10
4-Chlorotoluene	ND		50	2.7	ug/L			10/07/22 22:07	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 22:07	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*68 - 130*		*10/07/22 22:07*	*10*
4-Bromofluorobenzene (Surr)	*99*		*76 - 123*		*10/07/22 22:07*	*10*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/07/22 22:07*	*10*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*10/07/22 22:07*	*10*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0061**	**J**	0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 20:13	1
Iron	**0.15**		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 19:16	1
Potassium	**2400**		5.0	1.0	mg/L		10/10/22 09:29	10/11/22 20:38	10
Sodium	**201**		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 20:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	**0.0047**	**J**	0.010	0.0035	mg/L			10/10/22 13:34	1

Client Sample ID: WG-12595539-100522-KM-019

Lab Sample ID: 480-202439-14

Date Collected: 10/05/22 13:40

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		50	5.9	ug/L			10/07/22 22:31	10
1,2,4-Trichlorobenzene	ND		50	3.9	ug/L			10/07/22 22:31	10
1,2-Dichlorobenzene	**14**	**J**	50	4.4	ug/L			10/07/22 22:31	10
1,3-Dichlorobenzene	**110**		50	5.4	ug/L			10/07/22 22:31	10
1,4-Dichlorobenzene	**270**		50	5.1	ug/L			10/07/22 22:31	10
Acetone	ND	*+	250	20	ug/L			10/07/22 22:31	10
Benzene	**9.9**	**J**	50	6.0	ug/L			10/07/22 22:31	10
Chlorobenzene	**680**		50	4.8	ug/L			10/07/22 22:31	10
cis-1,2-Dichloroethene	**62**		50	5.7	ug/L			10/07/22 22:31	10
Tetrachloroethene	**65**		50	3.4	ug/L			10/07/22 22:31	10
Toluene	ND		50	4.5	ug/L			10/07/22 22:31	10
Trichloroethene	**130**		50	6.0	ug/L			10/07/22 22:31	10

Client Sample ID: WG-12595539-100522-KM-019

Lab Sample ID: 480-202439-14

Date Collected: 10/05/22 13:40

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**31**	**J**	50	7.5	ug/L			10/07/22 22:31	10
2-Chlorotoluene	**330**		50	3.3	ug/L			10/07/22 22:31	10
4-Chlorotoluene	ND		50	2.7	ug/L			10/07/22 22:31	10
3-Chlorotoluene	ND		50	3.1	ug/L			10/07/22 22:31	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*68 - 130*		*10/07/22 22:31*	*10*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/07/22 22:31*	*10*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/07/22 22:31*	*10*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/07/22 22:31*	*10*

Method: EPA 551.1 - Chlorinated Disinfection Byproducts and Solvents (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloropicrin	ND		0.51	0.51	ug/L		10/10/22 09:09	10/12/22 08:16	1

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 20:17	1
Iron	**1.7**		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 19:20	1
Potassium	**94.7**	**^2**	0.50	0.10	mg/L		10/10/22 09:29	10/10/22 20:17	1
Sodium	**102**		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 20:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	ND	F1	0.010	0.0035	mg/L			10/10/22 14:00	1

Client Sample ID: WG-12595539-100622-KM-020

Lab Sample ID: 480-202439-15

Date Collected: 10/06/22 11:10

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		10	1.2	ug/L			10/10/22 15:52	2
1,2,4-Trichlorobenzene	ND		10	0.78	ug/L			10/10/22 15:52	2
1,2-Dichlorobenzene	ND		10	0.89	ug/L			10/10/22 15:52	2
1,3-Dichlorobenzene	ND		10	1.1	ug/L			10/10/22 15:52	2
1,4-Dichlorobenzene	**3.2**	**J**	10	1.0	ug/L			10/10/22 15:52	2
Acetone	ND		50	4.0	ug/L			10/10/22 15:52	2
Benzene	ND		10	1.2	ug/L			10/10/22 15:52	2
Chlorobenzene	**3.1**	**J**	10	0.95	ug/L			10/10/22 15:52	2
cis-1,2-Dichloroethene	**19**		10	1.1	ug/L			10/10/22 15:52	2
Tetrachloroethene	ND		10	0.68	ug/L			10/10/22 15:52	2
Toluene	ND		10	0.91	ug/L			10/10/22 15:52	2
Trichloroethene	ND		10	1.2	ug/L			10/10/22 15:52	2
Vinyl chloride	**5.0**	**J**	10	1.5	ug/L			10/10/22 15:52	2
2-Chlorotoluene	**84**		10	0.66	ug/L			10/10/22 15:52	2
4-Chlorotoluene	ND		10	0.55	ug/L			10/10/22 15:52	2
3-Chlorotoluene	ND		10	0.62	ug/L			10/10/22 15:52	2

Client Sample ID: WG-12595539-100622-KM-020

Lab Sample ID: 480-202439-15

Date Collected: 10/06/22 11:10

Matrix: Water

Date Received: 10/06/22 14:37

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*68 - 130*		*10/10/22 15:52*	*2*
4-Bromofluorobenzene (Surr)	*99*		*76 - 123*		*10/10/22 15:52*	*2*
Toluene-d8 (Surr)	*97*		*77 - 120*		*10/10/22 15:52*	*2*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*10/10/22 15:52*	*2*

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	**1.2**		0.20	0.10	ug/L		10/10/22 08:56	10/11/22 20:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*29*		*15 - 110*	*10/10/22 08:56*	*10/11/22 20:48*	*1*

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 20:21	1
Iron	**0.41**		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 19:24	1
Potassium	**27.3**	**^2**	0.50	0.10	mg/L		10/10/22 09:29	10/10/22 20:21	1
Sodium	**135**		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 20:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable (MCAWW 420.4)	ND		0.010	0.0035	mg/L			10/10/22 14:11	1

Client Sample ID: TB-12595539-100422

Lab Sample ID: 480-202439-16

Date Collected: 10/04/22 09:00

Matrix: Water

Date Received: 10/06/22 14:37

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.39	ug/L			10/07/22 23:19	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.26	ug/L			10/07/22 23:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	0.36	ug/L			10/07/22 23:19	1
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L			10/07/22 23:19	1
1,1-Dichloroethane	ND		5.0	0.59	ug/L			10/07/22 23:19	1
1,1-Dichloroethene	ND		5.0	0.85	ug/L			10/07/22 23:19	1
1,2,4-Trichlorobenzene	ND		5.0	0.39	ug/L			10/07/22 23:19	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.62	ug/L			10/07/22 23:19	1
1,2-Dichlorobenzene	ND		5.0	0.44	ug/L			10/07/22 23:19	1
1,2-Dichloroethane	ND		5.0	0.60	ug/L			10/07/22 23:19	1
1,2-Dichloropropane	ND		5.0	0.61	ug/L			10/07/22 23:19	1
1,3-Dichlorobenzene	ND		5.0	0.54	ug/L			10/07/22 23:19	1
1,4-Dichlorobenzene	ND		5.0	0.51	ug/L			10/07/22 23:19	1
2-Butanone (MEK)	ND		25	1.8	ug/L			10/07/22 23:19	1
2-Hexanone	ND		25	2.0	ug/L			10/07/22 23:19	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.3	ug/L			10/07/22 23:19	1
Acetone	ND	*+	25	2.0	ug/L			10/07/22 23:19	1
Benzene	ND		5.0	0.60	ug/L			10/07/22 23:19	1
Bromoform	ND		5.0	0.47	ug/L			10/07/22 23:19	1
Bromomethane	ND		5.0	1.2	ug/L			10/07/22 23:19	1
Carbon disulfide	ND		5.0	0.29	ug/L			10/07/22 23:19	1
Carbon tetrachloride	ND		5.0	0.51	ug/L			10/07/22 23:19	1

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Client Sample ID: TB-12595539-100422
Date Collected: 10/04/22 09:00
Date Received: 10/06/22 14:37

Lab Sample ID: 480-202439-16
Matrix: Water

Method: 40CFR136A 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	ND		5.0	0.48	ug/L			10/07/22 23:19	1
Dibromochloromethane	ND		5.0	0.41	ug/L			10/07/22 23:19	1
Chloroethane	ND		5.0	0.87	ug/L			10/07/22 23:19	1
Chloroform	ND		5.0	0.54	ug/L			10/07/22 23:19	1
Chloromethane	ND		5.0	0.64	ug/L			10/07/22 23:19	1
cis-1,2-Dichloroethene	ND		5.0	0.57	ug/L			10/07/22 23:19	1
Bromodichloromethane	ND		5.0	0.54	ug/L			10/07/22 23:19	1
Dichlorodifluoromethane	ND		5.0	0.28	ug/L			10/07/22 23:19	1
Ethylbenzene	ND		5.0	0.46	ug/L			10/07/22 23:19	1
1,2-Dibromoethane	ND		5.0	0.50	ug/L			10/07/22 23:19	1
Isopropylbenzene	ND		5.0	0.51	ug/L			10/07/22 23:19	1
2-Chlorotoluene	ND		5.0	0.33	ug/L			10/07/22 23:19	1
Methyl tert-butyl ether	ND		5.0	0.35	ug/L			10/07/22 23:19	1
4-Chlorotoluene	ND		5.0	0.27	ug/L			10/07/22 23:19	1
Methylene Chloride	ND		5.0	0.81	ug/L			10/07/22 23:19	1
3-Chlorotoluene	ND		5.0	0.31	ug/L			10/07/22 23:19	1
Tetrachloroethene	ND		5.0	0.34	ug/L			10/07/22 23:19	1
Toluene	ND		5.0	0.45	ug/L			10/07/22 23:19	1
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L			10/07/22 23:19	1
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L			10/07/22 23:19	1
Trichloroethene	ND		5.0	0.60	ug/L			10/07/22 23:19	1
Trichlorofluoromethane	ND		5.0	0.45	ug/L			10/07/22 23:19	1
Vinyl chloride	ND		5.0	0.75	ug/L			10/07/22 23:19	1
Xylenes, Total	ND		10	1.1	ug/L			10/07/22 23:19	1
cis-1,3-Dichloropropene	ND		5.0	0.33	ug/L			10/07/22 23:19	1
Styrene	ND		5.0	0.38	ug/L			10/07/22 23:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*68 - 130*		*10/07/22 23:19*	*1*
4-Bromofluorobenzene (Surr)	*101*		*76 - 123*		*10/07/22 23:19*	*1*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/07/22 23:19*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*10/07/22 23:19*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(68-130)	(76-123)	(77-120)	(75-123)
480-202439-1	WG-12595539-100422-KM-006	105	100	99	102
480-202439-1 MS	WG-12595539-100422-KM-006	112	100	99	105
480-202439-1 MSD	WG-12595539-100422-KM-006	104	100	98	102
480-202439-2	WG-12595539-100422-KM-007	105	102	98	102
480-202439-2 - DL	WG-12595539-100422-KM-007	106	99	97	102
480-202439-3	WG-12595539-100422-KM-008	110	99	97	105
480-202439-4	WG-12595539-100422-KM-009	108	102	99	106
480-202439-5	WG-12595539-100522-KM-010	107	101	98	103
480-202439-6	WG-12595539-100422-KM-011	108	101	99	103
480-202439-7	WG-12595539-100522-KM-012	107	100	98	102
480-202439-8	WG-12595539-100522-KM-013	107	100	97	102
480-202439-8 - DL	WG-12595539-100522-KM-013	106	99	98	99
480-202439-9	WG-12595539-100522-KM-014	109	101	97	107
480-202439-10	WG-12595539-100522-KM-015	109	98	97	102
480-202439-11	WG-12595539-100622-KM-016	106	100	99	100
480-202439-12	WG-12595539-100522-KM-017	105	100	97	102
480-202439-12 - DL	WG-12595539-100522-KM-017	109	100	98	105
480-202439-13	WG-12595539-100622-KM-018	105	99	98	101
480-202439-14	WG-12595539-100522-KM-019	106	100	97	102
480-202439-15	WG-12595539-100622-KM-020	107	99	97	102
480-202439-16	TB-12595539-100422	107	101	98	105
LCS 480-644480/6	Lab Control Sample	111	101	99	99
LCS 480-644670/6	Lab Control Sample	108	99	99	99
LCS 480-644822/6	Lab Control Sample	110	100	98	100
MB 480-644480/8	Method Blank	108	102	99	99
MB 480-644670/8	Method Blank	110	99	98	103
MB 480-644822/8	Method Blank	110	100	98	103

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

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)						
480-202439-1	WG-12595539-100422-KM-006	36						
480-202439-1 MS	WG-12595539-100422-KM-006	59						
480-202439-1 MSD	WG-12595539-100422-KM-006	55						
480-202439-2	WG-12595539-100422-KM-007	38						
480-202439-3	WG-12595539-100422-KM-008	31						
480-202439-11	WG-12595539-100622-KM-016	33						
480-202439-15	WG-12595539-100622-KM-020	29						
LCS 480-644647/2-A	Lab Control Sample	38						
MB 480-644647/1-A	Method Blank	34						

Surrogate Legend

DXE = 1,4-Dioxane-d8

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-644480/8
Matrix: Water
Analysis Batch: 644480

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.39	ug/L			10/07/22 16:22	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.26	ug/L			10/07/22 16:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	0.36	ug/L			10/07/22 16:22	1
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L			10/07/22 16:22	1
1,1-Dichloroethane	ND		5.0	0.59	ug/L			10/07/22 16:22	1
1,1-Dichloroethene	ND		5.0	0.85	ug/L			10/07/22 16:22	1
1,2,4-Trichlorobenzene	ND		5.0	0.39	ug/L			10/07/22 16:22	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.62	ug/L			10/07/22 16:22	1
1,2-Dichlorobenzene	ND		5.0	0.44	ug/L			10/07/22 16:22	1
1,2-Dichloroethane	ND		5.0	0.60	ug/L			10/07/22 16:22	1
1,2-Dichloropropane	ND		5.0	0.61	ug/L			10/07/22 16:22	1
1,3-Dichlorobenzene	ND		5.0	0.54	ug/L			10/07/22 16:22	1
1,4-Dichlorobenzene	ND		5.0	0.51	ug/L			10/07/22 16:22	1
2-Butanone (MEK)	ND		25	1.8	ug/L			10/07/22 16:22	1
2-Hexanone	ND		25	2.0	ug/L			10/07/22 16:22	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.3	ug/L			10/07/22 16:22	1
Acetone	ND		25	2.0	ug/L			10/07/22 16:22	1
Benzene	ND		5.0	0.60	ug/L			10/07/22 16:22	1
Bromoform	ND		5.0	0.47	ug/L			10/07/22 16:22	1
Bromomethane	ND		5.0	1.2	ug/L			10/07/22 16:22	1
Carbon disulfide	ND		5.0	0.29	ug/L			10/07/22 16:22	1
Carbon tetrachloride	ND		5.0	0.51	ug/L			10/07/22 16:22	1
Chlorobenzene	ND		5.0	0.48	ug/L			10/07/22 16:22	1
Dibromochloromethane	ND		5.0	0.41	ug/L			10/07/22 16:22	1
Chloroethane	ND		5.0	0.87	ug/L			10/07/22 16:22	1
Chloroform	ND		5.0	0.54	ug/L			10/07/22 16:22	1
Chloromethane	ND		5.0	0.64	ug/L			10/07/22 16:22	1
cis-1,2-Dichloroethene	ND		5.0	0.57	ug/L			10/07/22 16:22	1
Bromodichloromethane	ND		5.0	0.54	ug/L			10/07/22 16:22	1
Dichlorodifluoromethane	ND		5.0	0.28	ug/L			10/07/22 16:22	1
Ethylbenzene	ND		5.0	0.46	ug/L			10/07/22 16:22	1
1,2-Dibromoethane	ND		5.0	0.50	ug/L			10/07/22 16:22	1
Isopropylbenzene	ND		5.0	0.51	ug/L			10/07/22 16:22	1
2-Chlorotoluene	ND		5.0	0.33	ug/L			10/07/22 16:22	1
Methyl tert-butyl ether	ND		5.0	0.35	ug/L			10/07/22 16:22	1
4-Chlorotoluene	ND		5.0	0.27	ug/L			10/07/22 16:22	1
Methylene Chloride	ND		5.0	0.81	ug/L			10/07/22 16:22	1
3-Chlorotoluene	ND		5.0	0.31	ug/L			10/07/22 16:22	1
Tetrachloroethene	ND		5.0	0.34	ug/L			10/07/22 16:22	1
Toluene	ND		5.0	0.45	ug/L			10/07/22 16:22	1
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L			10/07/22 16:22	1
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L			10/07/22 16:22	1
Trichloroethene	ND		5.0	0.60	ug/L			10/07/22 16:22	1
Trichlorofluoromethane	ND		5.0	0.45	ug/L			10/07/22 16:22	1
Vinyl chloride	ND		5.0	0.75	ug/L			10/07/22 16:22	1
Xylenes, Total	ND		10	1.1	ug/L			10/07/22 16:22	1
cis-1,3-Dichloropropene	ND		5.0	0.33	ug/L			10/07/22 16:22	1
Styrene	ND		5.0	0.38	ug/L			10/07/22 16:22	1

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-644480/8
Matrix: Water
Analysis Batch: 644480

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

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		68 - 130		10/07/22 16:22	1
4-Bromofluorobenzene (Surr)	102		76 - 123		10/07/22 16:22	1
Toluene-d8 (Surr)	99		77 - 120		10/07/22 16:22	1
Dibromofluoromethane (Surr)	99		75 - 123		10/07/22 16:22	1

Lab Sample ID: LCS 480-644480/6
Matrix: Water
Analysis Batch: 644480

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	20.1		ug/L		101	52 - 162
1,1,2,2-Tetrachloroethane	20.0	19.6		ug/L		98	46 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	20.7		ug/L		103	50 - 150
1,1,2-Trichloroethane	20.0	21.0		ug/L		105	52 - 150
1,1-Dichloroethane	20.0	19.9		ug/L		99	59 - 155
1,1-Dichloroethene	20.0	20.0		ug/L		100	1 - 234
1,2,4-Trichlorobenzene	20.0	17.7		ug/L		88	56 - 128
1,2-Dibromo-3-Chloropropane	20.0	20.9		ug/L		105	44 - 138
1,2-Dichlorobenzene	20.0	19.5		ug/L		97	18 - 190
1,2-Dichloroethane	20.0	21.9		ug/L		110	49 - 155
1,2-Dichloropropane	20.0	20.2		ug/L		101	1 - 210
1,3-Dichlorobenzene	20.0	19.9		ug/L		99	59 - 156
1,4-Dichlorobenzene	20.0	19.8		ug/L		99	18 - 190
2-Butanone (MEK)	100	137		ug/L		137	57 - 140
2-Hexanone	100	133		ug/L		133	50 - 150
4-Methyl-2-pentanone (MIBK)	100	118		ug/L		118	50 - 150
Acetone	100	166	*+	ug/L		166	21 - 161
Benzene	20.0	19.6		ug/L		98	37 - 151
Bromoform	20.0	21.8		ug/L		109	45 - 169
Bromomethane	20.0	20.3		ug/L		102	1 - 242
Carbon disulfide	20.0	14.4		ug/L		72	49 - 145
Carbon tetrachloride	20.0	20.3		ug/L		102	70 - 140
Chlorobenzene	20.0	19.7		ug/L		98	37 - 160
Dibromochloromethane	20.0	21.8		ug/L		109	53 - 149
Chloroethane	20.0	22.0		ug/L		110	14 - 230
Chloroform	20.0	20.1		ug/L		101	51 - 138
Chloromethane	20.0	24.4		ug/L		122	1 - 273
cis-1,2-Dichloroethene	20.0	19.3		ug/L		96	50 - 150
Bromodichloromethane	20.0	21.5		ug/L		107	35 - 155
Dichlorodifluoromethane	20.0	24.3		ug/L		121	59 - 135
Ethylbenzene	20.0	20.0		ug/L		100	37 - 162
1,2-Dibromoethane	20.0	20.8		ug/L		104	77 - 124
Isopropylbenzene	20.0	18.8		ug/L		94	68 - 133
2-Chlorotoluene	20.0	19.2		ug/L		96	72 - 126
Methyl tert-butyl ether	20.0	20.0		ug/L		100	78 - 118
4-Chlorotoluene	20.0	19.7		ug/L		99	76 - 120
Methylene Chloride	20.0	17.9		ug/L		89	1 - 221
Tetrachloroethene	20.0	19.4		ug/L		97	64 - 148

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-644480/6
Matrix: Water
Analysis Batch: 644480

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Toluene	20.0	19.6		ug/L		98	47 - 150
trans-1,2-Dichloroethene	20.0	19.2		ug/L		96	54 - 156
trans-1,3-Dichloropropene	20.0	20.9		ug/L		105	17 - 183
Trichloroethene	20.0	20.1		ug/L		100	71 - 157
Trichlorofluoromethane	20.0	21.3		ug/L		107	17 - 181
Vinyl chloride	20.0	21.7		ug/L		108	1 - 251
cis-1,3-Dichloropropene	20.0	20.4		ug/L		102	1 - 227
Styrene	20.0	19.9		ug/L		99	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*68 - 130*
4-Bromofluorobenzene (Surr)	*101*		*76 - 123*
Toluene-d8 (Surr)	*99*		*77 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 123*

Lab Sample ID: 480-202439-1 MS
Matrix: Water
Analysis Batch: 644480

Client Sample ID: WG-12595539-100422-KM-006
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	27	J	200	226		ug/L		99	59 - 155
1,2,4-Trichlorobenzene	ND		200	168		ug/L		84	56 - 128
1,2-Dichlorobenzene	36	J	200	217		ug/L		90	18 - 190
1,3-Dichlorobenzene	140		200	299		ug/L		82	59 - 156
1,4-Dichlorobenzene	200		200	353		ug/L		76	18 - 190
Acetone	ND	*+	1000	1080		ug/L		108	21 - 161
Benzene	ND		200	201		ug/L		100	37 - 151
Chlorobenzene	310		200	436		ug/L		63	37 - 160
cis-1,2-Dichloroethene	8.6	J	200	211		ug/L		101	50 - 150
Tetrachloroethene	ND		200	197		ug/L		99	64 - 148
Toluene	ND		200	194		ug/L		97	47 - 150
Trichloroethene	ND		200	205		ug/L		103	71 - 157
Vinyl chloride	8.8	J	200	234		ug/L		113	1 - 251
2-Chlorotoluene	210	F1	200	364		ug/L		77	72 - 126
4-Chlorotoluene	6.2	J	200	191		ug/L		92	76 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*112*		*68 - 130*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*
Toluene-d8 (Surr)	*99*		*77 - 120*
Dibromofluoromethane (Surr)	*105*		*75 - 123*

Lab Sample ID: 480-202439-1 MSD
Matrix: Water
Analysis Batch: 644480

Client Sample ID: WG-12595539-100422-KM-006
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethane	27	J	200	209		ug/L		91	59 - 155	8	15

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 480-202439-1 MSD
Matrix: Water
Analysis Batch: 644480

Client Sample ID: WG-12595539-100422-KM-006
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene	ND		200	160		ug/L		80	56 - 128	5	43
1,2-Dichlorobenzene	36	J	200	210		ug/L		87	18 - 190	3	15
1,3-Dichlorobenzene	140		200	292		ug/L		78	59 - 156	2	15
1,4-Dichlorobenzene	200		200	340		ug/L		69	18 - 190	4	15
Acetone	ND	*+	1000	991		ug/L		99	21 - 161	9	15
Benzene	ND		200	190		ug/L		95	37 - 151	6	15
Chlorobenzene	310		200	429		ug/L		59	37 - 160	2	15
cis-1,2-Dichloroethene	8.6	J	200	193		ug/L		92	50 - 150	9	15
Tetrachloroethene	ND		200	187		ug/L		94	64 - 148	5	15
Toluene	ND		200	186		ug/L		93	47 - 150	5	15
Trichloroethene	ND		200	191		ug/L		96	71 - 157	7	15
Vinyl chloride	8.8	J	200	218		ug/L		105	1 - 251	7	15
2-Chlorotoluene	210	F1	200	346	F1	ug/L		68	72 - 126	5	15
4-Chlorotoluene	6.2	J	200	192		ug/L		93	76 - 120	1	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*68 - 130*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*
Toluene-d8 (Surr)	*98*		*77 - 120*
Dibromofluoromethane (Surr)	*102*		*75 - 123*

Lab Sample ID: MB 480-644670/8
Matrix: Water
Analysis Batch: 644670

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.39	ug/L			10/10/22 12:43	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.26	ug/L			10/10/22 12:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	0.36	ug/L			10/10/22 12:43	1
1,1,2-Trichloroethane	ND		5.0	0.48	ug/L			10/10/22 12:43	1
1,1-Dichloroethane	ND		5.0	0.59	ug/L			10/10/22 12:43	1
1,1-Dichloroethene	ND		5.0	0.85	ug/L			10/10/22 12:43	1
1,2,4-Trichlorobenzene	ND		5.0	0.39	ug/L			10/10/22 12:43	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.62	ug/L			10/10/22 12:43	1
1,2-Dichlorobenzene	ND		5.0	0.44	ug/L			10/10/22 12:43	1
1,2-Dichloroethane	ND		5.0	0.60	ug/L			10/10/22 12:43	1
1,2-Dichloropropane	ND		5.0	0.61	ug/L			10/10/22 12:43	1
1,3-Dichlorobenzene	ND		5.0	0.54	ug/L			10/10/22 12:43	1
1,4-Dichlorobenzene	ND		5.0	0.51	ug/L			10/10/22 12:43	1
2-Butanone (MEK)	ND		25	1.8	ug/L			10/10/22 12:43	1
2-Hexanone	ND		25	2.0	ug/L			10/10/22 12:43	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.3	ug/L			10/10/22 12:43	1
Acetone	ND		25	2.0	ug/L			10/10/22 12:43	1
Benzene	ND		5.0	0.60	ug/L			10/10/22 12:43	1
Bromoform	ND		5.0	0.47	ug/L			10/10/22 12:43	1
Bromomethane	ND		5.0	1.2	ug/L			10/10/22 12:43	1
Carbon disulfide	ND		5.0	0.29	ug/L			10/10/22 12:43	1
Carbon tetrachloride	ND		5.0	0.51	ug/L			10/10/22 12:43	1

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-644670/8
Matrix: Water
Analysis Batch: 644670

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	ND		5.0	0.48	ug/L			10/10/22 12:43	1
Dibromochloromethane	ND		5.0	0.41	ug/L			10/10/22 12:43	1
Chloroethane	ND		5.0	0.87	ug/L			10/10/22 12:43	1
Chloroform	ND		5.0	0.54	ug/L			10/10/22 12:43	1
Chloromethane	ND		5.0	0.64	ug/L			10/10/22 12:43	1
cis-1,2-Dichloroethene	ND		5.0	0.57	ug/L			10/10/22 12:43	1
Bromodichloromethane	ND		5.0	0.54	ug/L			10/10/22 12:43	1
Dichlorodifluoromethane	ND		5.0	0.28	ug/L			10/10/22 12:43	1
Ethylbenzene	ND		5.0	0.46	ug/L			10/10/22 12:43	1
1,2-Dibromoethane	ND		5.0	0.50	ug/L			10/10/22 12:43	1
Isopropylbenzene	ND		5.0	0.51	ug/L			10/10/22 12:43	1
2-Chlorotoluene	ND		5.0	0.33	ug/L			10/10/22 12:43	1
Methyl tert-butyl ether	ND		5.0	0.35	ug/L			10/10/22 12:43	1
4-Chlorotoluene	ND		5.0	0.27	ug/L			10/10/22 12:43	1
Methylene Chloride	ND		5.0	0.81	ug/L			10/10/22 12:43	1
3-Chlorotoluene	ND		5.0	0.31	ug/L			10/10/22 12:43	1
Tetrachloroethene	ND		5.0	0.34	ug/L			10/10/22 12:43	1
Toluene	ND		5.0	0.45	ug/L			10/10/22 12:43	1
trans-1,2-Dichloroethene	ND		5.0	0.59	ug/L			10/10/22 12:43	1
trans-1,3-Dichloropropene	ND		5.0	0.44	ug/L			10/10/22 12:43	1
Trichloroethene	ND		5.0	0.60	ug/L			10/10/22 12:43	1
Trichlorofluoromethane	ND		5.0	0.45	ug/L			10/10/22 12:43	1
Vinyl chloride	ND		5.0	0.75	ug/L			10/10/22 12:43	1
Xylenes, Total	ND		10	1.1	ug/L			10/10/22 12:43	1
cis-1,3-Dichloropropene	ND		5.0	0.33	ug/L			10/10/22 12:43	1
Styrene	ND		5.0	0.38	ug/L			10/10/22 12:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*68 - 130*		*10/10/22 12:43*	*1*
4-Bromofluorobenzene (Surr)	*99*		*76 - 123*		*10/10/22 12:43*	*1*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/10/22 12:43*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 123*		*10/10/22 12:43*	*1*

Lab Sample ID: LCS 480-644670/6
Matrix: Water
Analysis Batch: 644670

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	19.9		ug/L		100	52 - 162
1,1,2,2-Tetrachloroethane	20.0	18.1		ug/L		90	46 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	19.2		ug/L		96	50 - 150
1,1,2-Trichloroethane	20.0	18.8		ug/L		94	52 - 150
1,1-Dichloroethane	20.0	18.1		ug/L		90	59 - 155
1,1-Dichloroethene	20.0	18.2		ug/L		91	1 - 234
1,2,4-Trichlorobenzene	20.0	15.6		ug/L		78	56 - 128
1,2-Dibromo-3-Chloropropane	20.0	18.8		ug/L		94	44 - 138
1,2-Dichlorobenzene	20.0	17.5		ug/L		87	18 - 190
1,2-Dichloroethane	20.0	20.3		ug/L		101	49 - 155

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-644670/6
Matrix: Water
Analysis Batch: 644670

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dichloropropane	20.0	18.3		ug/L		92	1 - 210
1,3-Dichlorobenzene	20.0	17.7		ug/L		88	59 - 156
1,4-Dichlorobenzene	20.0	17.8		ug/L		89	18 - 190
2-Butanone (MEK)	100	115		ug/L		115	57 - 140
2-Hexanone	100	120		ug/L		120	50 - 150
4-Methyl-2-pentanone (MIBK)	100	114		ug/L		114	50 - 150
Acetone	100	109		ug/L		109	21 - 161
Benzene	20.0	17.8		ug/L		89	37 - 151
Bromoform	20.0	19.8		ug/L		99	45 - 169
Bromomethane	20.0	20.8		ug/L		104	1 - 242
Carbon disulfide	20.0	16.6		ug/L		83	49 - 145
Carbon tetrachloride	20.0	20.1		ug/L		100	70 - 140
Chlorobenzene	20.0	18.2		ug/L		91	37 - 160
Dibromochloromethane	20.0	19.4		ug/L		97	53 - 149
Chloroethane	20.0	21.1		ug/L		105	14 - 230
Chloroform	20.0	18.7		ug/L		94	51 - 138
Chloromethane	20.0	23.5		ug/L		118	1 - 273
cis-1,2-Dichloroethene	20.0	18.1		ug/L		90	50 - 150
Bromodichloromethane	20.0	19.6		ug/L		98	35 - 155
Dichlorodifluoromethane	20.0	19.7		ug/L		99	59 - 135
Ethylbenzene	20.0	18.2		ug/L		91	37 - 162
1,2-Dibromoethane	20.0	19.2		ug/L		96	77 - 124
Isopropylbenzene	20.0	17.2		ug/L		86	68 - 133
2-Chlorotoluene	20.0	17.6		ug/L		88	72 - 126
Methyl tert-butyl ether	20.0	18.7		ug/L		94	78 - 118
4-Chlorotoluene	20.0	17.3		ug/L		86	76 - 120
Methylene Chloride	20.0	16.6		ug/L		83	1 - 221
Tetrachloroethene	20.0	18.1		ug/L		91	64 - 148
Toluene	20.0	18.0		ug/L		90	47 - 150
trans-1,2-Dichloroethene	20.0	17.5		ug/L		88	54 - 156
trans-1,3-Dichloropropene	20.0	18.6		ug/L		93	17 - 183
Trichloroethene	20.0	18.3		ug/L		91	71 - 157
Trichlorofluoromethane	20.0	21.4		ug/L		107	17 - 181
Vinyl chloride	20.0	20.5		ug/L		102	1 - 251
cis-1,3-Dichloropropene	20.0	18.3		ug/L		91	1 - 227
Styrene	20.0	17.8		ug/L		89	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*68 - 130*
4-Bromofluorobenzene (Surr)	*99*		*76 - 123*
Toluene-d8 (Surr)	*99*		*77 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 123*

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-644822/8
Matrix: Water
Analysis Batch: 644822

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		5.0	0.59	ug/L			10/11/22 12:49	1
1,2,4-Trichlorobenzene	ND		5.0	0.39	ug/L			10/11/22 12:49	1
1,2-Dichlorobenzene	ND		5.0	0.44	ug/L			10/11/22 12:49	1
1,3-Dichlorobenzene	ND		5.0	0.54	ug/L			10/11/22 12:49	1
1,4-Dichlorobenzene	ND		5.0	0.51	ug/L			10/11/22 12:49	1
Acetone	ND		25	2.0	ug/L			10/11/22 12:49	1
Benzene	ND		5.0	0.60	ug/L			10/11/22 12:49	1
Chlorobenzene	ND		5.0	0.48	ug/L			10/11/22 12:49	1
cis-1,2-Dichloroethene	ND		5.0	0.57	ug/L			10/11/22 12:49	1
2-Chlorotoluene	ND		5.0	0.33	ug/L			10/11/22 12:49	1
4-Chlorotoluene	ND		5.0	0.27	ug/L			10/11/22 12:49	1
3-Chlorotoluene	ND		5.0	0.31	ug/L			10/11/22 12:49	1
Tetrachloroethene	ND		5.0	0.34	ug/L			10/11/22 12:49	1
Toluene	ND		5.0	0.45	ug/L			10/11/22 12:49	1
Trichloroethene	ND		5.0	0.60	ug/L			10/11/22 12:49	1
Vinyl chloride	ND		5.0	0.75	ug/L			10/11/22 12:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*68 - 130*		*10/11/22 12:49*	*1*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*		*10/11/22 12:49*	*1*
Toluene-d8 (Surr)	*98*		*77 - 120*		*10/11/22 12:49*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 123*		*10/11/22 12:49*	*1*

Lab Sample ID: LCS 480-644822/6
Matrix: Water
Analysis Batch: 644822

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	20.0	18.2		ug/L		91	59 - 155
1,2,4-Trichlorobenzene	20.0	15.8		ug/L		79	56 - 128
1,2-Dichlorobenzene	20.0	17.5		ug/L		88	18 - 190
1,3-Dichlorobenzene	20.0	17.7		ug/L		89	59 - 156
1,4-Dichlorobenzene	20.0	17.7		ug/L		88	18 - 190
Acetone	100	131		ug/L		131	21 - 161
Benzene	20.0	18.1		ug/L		91	37 - 151
Chlorobenzene	20.0	17.8		ug/L		89	37 - 160
cis-1,2-Dichloroethene	20.0	18.3		ug/L		92	50 - 150
2-Chlorotoluene	20.0	17.5		ug/L		88	72 - 126
4-Chlorotoluene	20.0	18.0		ug/L		90	76 - 120
Tetrachloroethene	20.0	18.3		ug/L		92	64 - 148
Toluene	20.0	17.9		ug/L		89	47 - 150
Trichloroethene	20.0	18.5		ug/L		92	71 - 157
Vinyl chloride	20.0	19.6		ug/L		98	1 - 251

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*68 - 130*
4-Bromofluorobenzene (Surr)	*100*		*76 - 123*
Toluene-d8 (Surr)	*98*		*77 - 120*

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-644822/6
Matrix: Water
Analysis Batch: 644822

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

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*75 - 123*

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

Lab Sample ID: MB 480-644647/1-A
Matrix: Water
Analysis Batch: 644816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 644647

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		10/10/22 08:56	10/11/22 14:52	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*34*		*15 - 110*	*10/10/22 08:56*	*10/11/22 14:52*	*1*

Lab Sample ID: LCS 480-644647/2-A
Matrix: Water
Analysis Batch: 644816

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 644647

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			2.00	2.49		ug/L		124	40 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*38*		*15 - 110*

Lab Sample ID: 480-202439-1 MS
Matrix: Water
Analysis Batch: 644816

Client Sample ID: WG-12595539-100422-KM-006
Prep Type: Total/NA
Prep Batch: 644647

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	8.6		5.00	14.7		ug/L		122	40 - 140		

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
1,4-Dioxane-d8	*59*		*15 - 110*

Lab Sample ID: 480-202439-1 MSD
Matrix: Water
Analysis Batch: 644816

Client Sample ID: WG-12595539-100422-KM-006
Prep Type: Total/NA
Prep Batch: 644647

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	8.6		5.00	14.6		ug/L		119	40 - 140	1	20

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,4-Dioxane-d8	*55*		*15 - 110*

Method: 551.1 - Chlorinated Disinfection Byproducts and Solvents (GC)

Lab Sample ID: MB 810-34741/1-B
Matrix: Water
Analysis Batch: 34907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34741

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloropicrin	ND		0.50	0.50	ug/L		10/10/22 09:09	10/11/22 22:37	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 480-644519/1-A
Matrix: Water
Analysis Batch: 644838

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 644519

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/10/22 09:29	10/10/22 18:45	1
Potassium	ND		0.50	0.10	mg/L		10/10/22 09:29	10/10/22 18:45	1
Sodium	ND		1.0	0.32	mg/L		10/10/22 09:29	10/10/22 18:45	1

Lab Sample ID: MB 480-644519/1-A
Matrix: Water
Analysis Batch: 645057

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 644519

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		10/10/22 09:29	10/11/22 17:48	1

Lab Sample ID: LCS 480-644519/2-A
Matrix: Water
Analysis Batch: 644838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 644519

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.201	0.204		mg/L		102	85 - 115
Potassium	10.0	9.90		mg/L		99	85 - 115
Sodium	10.0	9.70		mg/L		97	85 - 115

Lab Sample ID: LCS 480-644519/2-A
Matrix: Water
Analysis Batch: 645057

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 644519

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	10.0	10.52		mg/L		105	85 - 115

Lab Sample ID: 480-202439-1 MS
Matrix: Water
Analysis Batch: 644838

Client Sample ID: WG-12595539-100422-KM-006
Prep Type: Total/NA
Prep Batch: 644519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.015		0.201	0.224		mg/L		104	70 - 130
Sodium	169		10.0	178.3	4	mg/L		96	70 - 130

Lab Sample ID: 480-202439-1 MS
Matrix: Water
Analysis Batch: 645057

Client Sample ID: WG-12595539-100422-KM-006
Prep Type: Total/NA
Prep Batch: 644519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.80		10.0	11.26		mg/L		104	70 - 130

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 480-202439-1 MS — **Client Sample ID: WG-12595539-100422-KM-006**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 645057 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Potassium	906	^2	10.0	931.0	4	mg/L		246	70 - 130

Lab Sample ID: 480-202439-1 MSD — **Client Sample ID: WG-12595539-100422-KM-006**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644838 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.015		0.201	0.225		mg/L		105	70 - 130	1	20
Sodium	169		10.0	176.4	4	mg/L		77	70 - 130	1	20

Lab Sample ID: 480-202439-1 MSD — **Client Sample ID: WG-12595539-100422-KM-006**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 645057 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	0.80		10.0	11.18		mg/L		104	70 - 130	1	20

Lab Sample ID: 480-202439-1 MSD — **Client Sample ID: WG-12595539-100422-KM-006**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 645057 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Potassium	906	^2	10.0	907.4	4	mg/L		10	70 - 130	3	20

Lab Sample ID: 480-202439-4 MS — **Client Sample ID: WG-12595539-100422-KM-009**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644838 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.0065	J	0.201	0.214		mg/L		104	70 - 130
Potassium	156	^2	10.0	165.9	4	mg/L		99	70 - 130
Sodium	85.8		10.0	95.27	4	mg/L		95	70 - 130

Lab Sample ID: 480-202439-4 MS — **Client Sample ID: WG-12595539-100422-KM-009**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 645057 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.37		10.0	10.81		mg/L		104	70 - 130

Lab Sample ID: 480-202439-4 MSD — **Client Sample ID: WG-12595539-100422-KM-009**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644838 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.0065	J	0.201	0.219		mg/L		106	70 - 130	2	20
Potassium	156	^2	10.0	169.0	4	mg/L		130	70 - 130	2	20
Sodium	85.8		10.0	97.29	4	mg/L		115	70 - 130	2	20

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 480-202439-4 MSD — **Client Sample ID: WG-12595539-100422-KM-009**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 645057 — **Prep Batch: 644519**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	0.37		10.0	10.94		mg/L		106	70 - 130	1	20

Method: 420.4 - Phenolics, Total Recoverable

Lab Sample ID: MB 480-644757/100 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644757

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable	ND		0.010	0.0035	mg/L			10/10/22 13:54	1

Lab Sample ID: MB 480-644757/72 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644757

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenolics, Total Recoverable	ND		0.010	0.0035	mg/L			10/10/22 12:11	1

Lab Sample ID: LCS 480-644757/101 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644757

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenolics, Total Recoverable	0.100	0.0912		mg/L		91	90 - 110

Lab Sample ID: LCS 480-644757/73 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644757

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenolics, Total Recoverable	0.100	0.0939		mg/L		94	90 - 110

Lab Sample ID: 480-202439-1 MS — **Client Sample ID: WG-12595539-100422-KM-006**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644757

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phenolics, Total Recoverable	ND		0.100	0.0949		mg/L		95	90 - 110

Lab Sample ID: 480-202439-1 MSD — **Client Sample ID: WG-12595539-100422-KM-006**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 644757

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phenolics, Total Recoverable	ND		0.100	0.0974		mg/L		97	90 - 110	3	20

Method: 420.4 - Phenolics, Total Recoverable (Continued)

Lab Sample ID: 480-202439-14 MS
Matrix: Water
Analysis Batch: 644757

Client Sample ID: WG-12595539-100522-KM-019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Phenolics, Total Recoverable	ND	F1	0.100	0.0892	F1	mg/L		89	90 - 110		

Lab Sample ID: 480-202439-14 DU
Matrix: Water
Analysis Batch: 644757

Client Sample ID: WG-12595539-100522-KM-019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Phenolics, Total Recoverable	ND	F1		ND		mg/L				NC	20

GC/MS VOA

Analysis Batch: 644480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	624.1	
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	624.1	
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	624.1	
480-202439-4	WG-12595539-100422-KM-009	Total/NA	Water	624.1	
480-202439-6	WG-12595539-100422-KM-011	Total/NA	Water	624.1	
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	624.1	
480-202439-8	WG-12595539-100522-KM-013	Total/NA	Water	624.1	
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	624.1	
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	624.1	
480-202439-13	WG-12595539-100622-KM-018	Total/NA	Water	624.1	
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	624.1	
480-202439-16	TB-12595539-100422	Total/NA	Water	624.1	
MB 480-644480/8	Method Blank	Total/NA	Water	624.1	
LCS 480-644480/6	Lab Control Sample	Total/NA	Water	624.1	
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	624.1	
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	624.1	

Analysis Batch: 644670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-2 - DL	WG-12595539-100422-KM-007	Total/NA	Water	624.1	
480-202439-5	WG-12595539-100522-KM-010	Total/NA	Water	624.1	
480-202439-8 - DL	WG-12595539-100522-KM-013	Total/NA	Water	624.1	
480-202439-9	WG-12595539-100522-KM-014	Total/NA	Water	624.1	
480-202439-10	WG-12595539-100522-KM-015	Total/NA	Water	624.1	
480-202439-15	WG-12595539-100622-KM-020	Total/NA	Water	624.1	
MB 480-644670/8	Method Blank	Total/NA	Water	624.1	
LCS 480-644670/6	Lab Control Sample	Total/NA	Water	624.1	

Analysis Batch: 644822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-12 - DL	WG-12595539-100522-KM-017	Total/NA	Water	624.1	
MB 480-644822/8	Method Blank	Total/NA	Water	624.1	
LCS 480-644822/6	Lab Control Sample	Total/NA	Water	624.1	

GC/MS Semi VOA

Prep Batch: 644647

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	3510C	
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	3510C	
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	3510C	
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	3510C	
480-202439-15	WG-12595539-100622-KM-020	Total/NA	Water	3510C	
MB 480-644647/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-644647/2-A	Lab Control Sample	Total/NA	Water	3510C	
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	3510C	
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	3510C	

Analysis Batch: 644816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	8270D SIM ID	644647

GC/MS Semi VOA (Continued)

Analysis Batch: 644816 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	8270D SIM ID	644647
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	8270D SIM ID	644647
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	8270D SIM ID	644647
480-202439-15	WG-12595539-100622-KM-020	Total/NA	Water	8270D SIM ID	644647
MB 480-644647/1-A	Method Blank	Total/NA	Water	8270D SIM ID	644647
LCS 480-644647/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	644647
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	8270D SIM ID	644647
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	8270D SIM ID	644647

GC Semi VOA

Prep Batch: 34741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	551,1	
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	551,1	
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	551,1	
MB 810-34741/1-B	Method Blank	Total/NA	Water	551,1	
LLCS 810-34741/2-B	Lab Control Sample	Total/NA	Water	551,1	

Cleanup Batch: 34816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	Aliquot	34741
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	Aliquot	34741
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	Aliquot	34741
MB 810-34741/1-B	Method Blank	Total/NA	Water	Aliquot	34741
LLCS 810-34741/2-B	Lab Control Sample	Total/NA	Water	Aliquot	34741

Analysis Batch: 34907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	551.1	34816
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	551.1	34816
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	551.1	34816
MB 810-34741/1-B	Method Blank	Total/NA	Water	551.1	34816
LLCS 810-34741/2-B	Lab Control Sample	Total/NA	Water	551.1	34816

Metals

Prep Batch: 644519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	200.7	
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	200.7	
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	200.7	
480-202439-4	WG-12595539-100422-KM-009	Total/NA	Water	200.7	
480-202439-6	WG-12595539-100422-KM-011	Total/NA	Water	200.7	
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	200.7	
480-202439-8	WG-12595539-100522-KM-013	Total/NA	Water	200.7	
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	200.7	
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	200.7	
480-202439-13	WG-12595539-100622-KM-018	Total/NA	Water	200.7	
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	200.7	
480-202439-15	WG-12595539-100622-KM-020	Total/NA	Water	200.7	
MB 480-644519/1-A	Method Blank	Total/NA	Water	200.7	

Metals (Continued)

Prep Batch: 644519 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-644519/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	200.7	
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	200.7	
480-202439-4 MS	WG-12595539-100422-KM-009	Total/NA	Water	200.7	
480-202439-4 MSD	WG-12595539-100422-KM-009	Total/NA	Water	200.7	

Analysis Batch: 644838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-4	WG-12595539-100422-KM-009	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-6	WG-12595539-100422-KM-011	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-8	WG-12595539-100522-KM-013	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-13	WG-12595539-100622-KM-018	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-15	WG-12595539-100622-KM-020	Total/NA	Water	200.7 Rev 4.4	644519
MB 480-644519/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	644519
LCS 480-644519/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-4 MS	WG-12595539-100422-KM-009	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-4 MSD	WG-12595539-100422-KM-009	Total/NA	Water	200.7 Rev 4.4	644519

Analysis Batch: 645057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-4	WG-12595539-100422-KM-009	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-6	WG-12595539-100422-KM-011	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-8	WG-12595539-100522-KM-013	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-13	WG-12595539-100622-KM-018	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-13	WG-12595539-100622-KM-018	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-15	WG-12595539-100622-KM-020	Total/NA	Water	200.7 Rev 4.4	644519
MB 480-644519/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	644519
LCS 480-644519/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519

Metals (Continued)

Analysis Batch: 645057 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-4 MS	WG-12595539-100422-KM-009	Total/NA	Water	200.7 Rev 4.4	644519
480-202439-4 MSD	WG-12595539-100422-KM-009	Total/NA	Water	200.7 Rev 4.4	644519

General Chemistry

Analysis Batch: 644757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-202439-1	WG-12595539-100422-KM-006	Total/NA	Water	420.4	
480-202439-2	WG-12595539-100422-KM-007	Total/NA	Water	420.4	
480-202439-3	WG-12595539-100422-KM-008	Total/NA	Water	420.4	
480-202439-4	WG-12595539-100422-KM-009	Total/NA	Water	420.4	
480-202439-6	WG-12595539-100422-KM-011	Total/NA	Water	420.4	
480-202439-7	WG-12595539-100522-KM-012	Total/NA	Water	420.4	
480-202439-8	WG-12595539-100522-KM-013	Total/NA	Water	420.4	
480-202439-11	WG-12595539-100622-KM-016	Total/NA	Water	420.4	
480-202439-12	WG-12595539-100522-KM-017	Total/NA	Water	420.4	
480-202439-13	WG-12595539-100622-KM-018	Total/NA	Water	420.4	
480-202439-14	WG-12595539-100522-KM-019	Total/NA	Water	420.4	
480-202439-15	WG-12595539-100622-KM-020	Total/NA	Water	420.4	
MB 480-644757/100	Method Blank	Total/NA	Water	420.4	
MB 480-644757/72	Method Blank	Total/NA	Water	420.4	
LCS 480-644757/101	Lab Control Sample	Total/NA	Water	420.4	
LCS 480-644757/73	Lab Control Sample	Total/NA	Water	420.4	
480-202439-1 MS	WG-12595539-100422-KM-006	Total/NA	Water	420.4	
480-202439-1 MSD	WG-12595539-100422-KM-006	Total/NA	Water	420.4	
480-202439-14 MS	WG-12595539-100522-KM-019	Total/NA	Water	420.4	
480-202439-14 DU	WG-12595539-100522-KM-019	Total/NA	Water	420.4	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Client Sample ID: WG-12595539-100422-KM-006

Lab Sample ID: 480-202439-1
Date Collected: 10/04/22 11:22
Matrix: Water
Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 17:20
Total/NA	Prep	3510C			644647	MS	EET BUF	10/10/22 08:56
Total/NA	Analysis	8270D SIM ID		1	644816	RJS	EET BUF	10/11/22 16:20
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 18:52
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 17:55
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		5	645057	LMH	EET BUF	10/11/22 19:56
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:03

Client Sample ID: WG-12595539-100422-KM-007

Lab Sample ID: 480-202439-2
Date Collected: 10/04/22 11:40
Matrix: Water
Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 17:44
Total/NA	Analysis	624.1	DL	40	644670	ATG	EET BUF	10/10/22 13:28
Total/NA	Prep	3510C			644647	MS	EET BUF	10/10/22 08:56
Total/NA	Analysis	8270D SIM ID		1	644816	RJS	EET BUF	10/11/22 19:42
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:12
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 18:26
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		5	645057	LMH	EET BUF	10/11/22 20:15
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 12:39

Client Sample ID: WG-12595539-100422-KM-008

Lab Sample ID: 480-202439-3
Date Collected: 10/04/22 13:08
Matrix: Water
Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 18:08
Total/NA	Prep	3510C			644647	MS	EET BUF	10/10/22 08:56
Total/NA	Analysis	8270D SIM ID		1	644816	RJS	EET BUF	10/11/22 20:04
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:38
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 18:41
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		5	645057	LMH	EET BUF	10/11/22 20:30
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 12:43

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Client Sample ID: WG-12595539-100422-KM-009

Lab Sample ID: 480-202439-4
Date Collected: 10/04/22 13:35
Matrix: Water
Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 18:32
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:27
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 18:30
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:12

Client Sample ID: WG-12595539-100522-KM-010

Lab Sample ID: 480-202439-5
Date Collected: 10/05/22 10:10
Matrix: Water
Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	644670	ATG	EET BUF	10/10/22 13:52

Client Sample ID: WG-12595539-100422-KM-011

Lab Sample ID: 480-202439-6
Date Collected: 10/04/22 13:35
Matrix: Water
Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 19:20
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:42
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 18:57
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:16

Client Sample ID: WG-12595539-100522-KM-012

Lab Sample ID: 480-202439-7
Date Collected: 10/05/22 12:04
Matrix: Water
Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 19:44
Total/NA	Prep	551,1			34741	MP	EA SB	10/10/22 09:09
Total/NA	Cleanup	Aliquot			34816	MP	EA SB	10/10/22 15:50
Total/NA	Analysis	551.1		1	34907	JB	EA SB	10/12/22 06:20
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:46
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 19:01
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:20

Client Sample ID: WG-12595539-100522-KM-013

Lab Sample ID: 480-202439-8

Date Collected: 10/05/22 09:25

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 20:07
Total/NA	Analysis	624.1	DL	50	644670	ATG	EET BUF	10/10/22 14:16
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:50
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 19:05
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:23

Client Sample ID: WG-12595539-100522-KM-014

Lab Sample ID: 480-202439-9

Date Collected: 10/05/22 13:38

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	644670	ATG	EET BUF	10/10/22 14:40

Client Sample ID: WG-12595539-100522-KM-015

Lab Sample ID: 480-202439-10

Date Collected: 10/05/22 10:55

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		4	644670	ATG	EET BUF	10/10/22 15:03

Client Sample ID: WG-12595539-100622-KM-016

Lab Sample ID: 480-202439-11

Date Collected: 10/06/22 10:10

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 21:20
Total/NA	Prep	3510C			644647	MS	EET BUF	10/10/22 08:56
Total/NA	Analysis	8270D SIM ID		1	644816	RJS	EET BUF	10/11/22 20:26
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:54
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 19:08
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		10	645057	LMH	EET BUF	10/11/22 20:34
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:27

Client Sample ID: WG-12595539-100522-KM-017

Lab Sample ID: 480-202439-12

Date Collected: 10/05/22 12:20

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 21:44
Total/NA	Analysis	624.1	DL	2000	644822	ATG	EET BUF	10/11/22 13:55

Client Sample ID: WG-12595539-100522-KM-017

Lab Sample ID: 480-202439-12

Date Collected: 10/05/22 12:20

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	551,1			34741	MP	EA SB	10/10/22 09:09
Total/NA	Cleanup	Aliquot			34816	MP	EA SB	10/10/22 15:50
Total/NA	Analysis	551.1		1	34907	JB	EA SB	10/12/22 06:59
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 19:58
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 19:12
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:31

Client Sample ID: WG-12595539-100622-KM-018

Lab Sample ID: 480-202439-13

Date Collected: 10/06/22 12:00

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 22:07
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 20:13
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 19:16
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		10	645057	LMH	EET BUF	10/11/22 20:38
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 13:34

Client Sample ID: WG-12595539-100522-KM-019

Lab Sample ID: 480-202439-14

Date Collected: 10/05/22 13:40

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		10	644480	ATG	EET BUF	10/07/22 22:31
Total/NA	Prep	551,1			34741	MP	EA SB	10/10/22 09:09
Total/NA	Cleanup	Aliquot			34816	MP	EA SB	10/10/22 15:50
Total/NA	Analysis	551.1		1	34907	JB	EA SB	10/12/22 08:16
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 20:17
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 19:20
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 14:00

Client Sample ID: WG-12595539-100622-KM-020

Lab Sample ID: 480-202439-15

Date Collected: 10/06/22 11:10

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		2	644670	ATG	EET BUF	10/10/22 15:52

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Client Sample ID: WG-12595539-100622-KM-020

Lab Sample ID: 480-202439-15

Date Collected: 10/06/22 11:10

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			644647	MS	EET BUF	10/10/22 08:56
Total/NA	Analysis	8270D SIM ID		1	644816	RJS	EET BUF	10/11/22 20:48
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	644838	LMH	EET BUF	10/10/22 20:21
Total/NA	Prep	200.7			644519	NVK	EET BUF	10/10/22 09:29
Total/NA	Analysis	200.7 Rev 4.4		1	645057	LMH	EET BUF	10/11/22 19:24
Total/NA	Analysis	420.4		1	644757	CLT	EET BUF	10/10/22 14:11

Client Sample ID: TB-12595539-100422

Lab Sample ID: 480-202439-16

Date Collected: 10/04/22 09:00

Matrix: Water

Date Received: 10/06/22 14:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	644480	ATG	EET BUF	10/07/22 23:19

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Laboratory: Eurofins Buffalo

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-0686	07-06-22 *
Connecticut	State	PH-0568	03-31-24
Florida	NELAP	E87672	06-30-23
Georgia	State	10026 (NY)	04-01-23
Georgia	State Program	N/A	03-31-09 *
Georgia (DW)	State	956	03-31-23
Illinois	NELAP	200003	09-30-23
Iowa	State	374	03-01-23
Iowa	State Program	374	03-01-09 *
Kansas	NELAP	E-10187	01-31-23
Kentucky (DW)	State	90029	12-31-22
Kentucky (UST)	State	30	04-01-23
Kentucky (WW)	State	KY90029	12-31-22
Louisiana	NELAP	02031	06-30-23
Louisiana (All)	NELAP	02031	06-30-23
Maine	State	NY00044	12-04-22
Maryland	State	294	03-31-23
Massachusetts	State	M-NY044	06-30-23
Michigan	State	9937	03-31-23
Michigan	State Program	9937	04-01-09 *
New Hampshire	NELAP	2973	09-11-19 *
New Hampshire	NELAP	2337	11-17-22
New Jersey	NELAP	NY455	06-30-23
New York	NELAP	10026	03-31-23
Pennsylvania	NELAP	68-00281	07-31-23
Rhode Island	State	LAO00328	12-30-22
Tennessee	State	02970	04-01-23
Texas	NELAP	T104704412-18-10	07-31-23
USDA	US Federal Programs	P330-18-00039	03-25-24
Virginia	NELAP	460185	09-14-23
Washington	State	C784	02-10-23
Wisconsin	State	998310390	08-31-23

Laboratory: Eurofins Eaton South Bend

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	ISO/IEC 17025	5794.01	07-31-24
Alabama	State	40700	06-30-23
Alaska	State	IN00035	06-30-23
Arizona	State	AZ0432	07-26-23
Arkansas (DW)	State	EPA IN00035	06-30-23
California	State	2920	06-30-23
Colorado	State	IN00035	02-28-23
Connecticut	State	PH-0132	03-31-22 *
Delaware (DW)	State	IN00035	06-30-23
Florida	NELAP	E87775	06-30-23
Georgia (DW)	State	929	06-30-23
Hawaii	State	IN035	06-30-23
Idaho (DW)	State	IN00035	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Laboratory: Eurofins Eaton South Bend (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
IL Dept. of Public Health (Micro)	State	17767	12-31-22
Illinois	NELAP	200001	09-30-23
Indiana	State	C-71-01	12-31-22
Indiana (Micro)	State	M-76-07	12-31-22
Iowa	State	IA Lab #098	11-01-23
Kansas	NELAP	E-10233	10-31-22
Kentucky (DW)	State	KY90056	12-31-22
Louisiana (DW)	State	LA180008	12-31-22
Maine	State	IN00035	05-01-23
Maryland	State	209	03-31-23
Massachusetts	State	M-IN035	06-30-23
MI - RadChem Recognition	State	9926	06-30-23
Michigan	State	9926	12-31-22
Minnesota	NELAP	1989807	12-31-22
Mississippi	State	IN00035	06-30-22 *
Missouri	State	880	09-30-24
Montana (DW)	State	CERT0026	01-01-23
Nebraska	State	NE-OS-05-04	06-30-23
Nevada	State	IN000352021-2	07-31-23
New Hampshire	NELAP	2124	11-05-22
New Jersey	NELAP	IN598	06-30-23
New Mexico	State	IN00035	06-30-23
New York	NELAP	11398	04-01-23
North Carolina (DW)	State	18700	07-31-23
North Dakota	State	R-035	06-30-23
Ohio	State	87775	06-30-23
Oklahoma	NELAP	D9508	08-31-23
Oregon	NELAP	4156	09-16-23
Pennsylvania	NELAP	68-00466	04-30-23
Puerto Rico	State	IN00035	04-01-23
Rhode Island	State	LAO00343	12-30-22
South Carolina	State	95005001	06-30-22 *
South Dakota (DW)	State	IN00035	12-31-22
Tennessee	State	TN02973	06-30-23
Texas	NELAP	T104704187-20-4	12-31-22
Texas	TCEQ Water Supply	TX207	06-30-23
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25
Utah	NELAP	IN00035	07-31-23
Vermont	State	VT-8775	11-15-22
Virginia	NELAP	460275	03-14-23
Washington	State	C837	01-01-23
West Virginia (DW)	State	9927 C	12-31-22
Wisconsin	State	999766900	08-31-23
Wisconsin (Micro)	State	10121	12-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	40CFR136A	EET BUF
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	EET BUF
551.1	Chlorinated Disinfection Byproducts and Solvents (GC)	EPA	EA SB
200.7 Rev 4.4	Metals (ICP)	EPA	EET BUF
420.4	Phenolics, Total Recoverable	MCAWW	EET BUF
200.7	Preparation, Total Metals	EPA	EET BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET BUF
551,1	Extraction of Chlorinated Disinfection Byproducts and Chlorinated Solvents	EPA	EA SB
Aliquot	Preparation, Extract aliquot	None	EA SB

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777
EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: GHD Services Inc.
Project/Site: 12595539, Cascades

Job ID: 480-202439-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-202439-1	WG-12595539-100422-KM-006	Water	10/04/22 11:22	10/06/22 14:37
480-202439-2	WG-12595539-100422-KM-007	Water	10/04/22 11:40	10/06/22 14:37
480-202439-3	WG-12595539-100422-KM-008	Water	10/04/22 13:08	10/06/22 14:37
480-202439-4	WG-12595539-100422-KM-009	Water	10/04/22 13:35	10/06/22 14:37
480-202439-5	WG-12595539-100522-KM-010	Water	10/05/22 10:10	10/06/22 14:37
480-202439-6	WG-12595539-100422-KM-011	Water	10/04/22 13:35	10/06/22 14:37
480-202439-7	WG-12595539-100522-KM-012	Water	10/05/22 12:04	10/06/22 14:37
480-202439-8	WG-12595539-100522-KM-013	Water	10/05/22 09:25	10/06/22 14:37
480-202439-9	WG-12595539-100522-KM-014	Water	10/05/22 13:38	10/06/22 14:37
480-202439-10	WG-12595539-100522-KM-015	Water	10/05/22 10:55	10/06/22 14:37
480-202439-11	WG-12595539-100622-KM-016	Water	10/06/22 10:10	10/06/22 14:37
480-202439-12	WG-12595539-100522-KM-017	Water	10/05/22 12:20	10/06/22 14:37
480-202439-13	WG-12595539-100622-KM-018	Water	10/06/22 12:00	10/06/22 14:37
480-202439-14	WG-12595539-100522-KM-019	Water	10/05/22 13:40	10/06/22 14:37
480-202439-15	WG-12595539-100622-KM-020	Water	10/06/22 11:10	10/06/22 14:37
480-202439-16	TB-12595539-100422	Water	10/04/22 09:00	10/06/22 14:37

CHAIN OF CUSTODY RECORD

COC NO.: 60064

PAGE 1 OF 2

Address: 2055 Niagara Falls Blvd

Phone: 716 297 6150 Fax:

Project No/ Phase/Task Code: 12595539 - DEL.001	Laboratory Name: Eurofins	Lab Location: Amherst NY	SSOW ID:
Project Name: Cascades Annual GW	Lab Contact: Denise Heckler		Cooler No:
Project Location: Niagara Falls NY			Carrier: Hand Delivered
GHD Chemistry Contact: Sheri Finn			Airbill No:
Sampler(s): K. Miller J. Kaweski D. Tyran			Total # of Containers: KM ~~102~~ 104

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	SSPL VOCs	Total VOCs	SSPL Metals	Phenols	1,4 Dioxane	Chloral Picrine									Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)						HC	HC	HN	H2		*											
1	WG-12595539-100422-KM-006	10/04/22	1122	WG	G	N	X	●	X	X	X										21	X	
2	WG-12595539-100422-KM-007	10/04/22	1140	WG	G	N	X		X	X	X										7		
3	WG-12595539-100422-KM-008	10/04/22	1308	WG	G	N	X		X	X	X										7		
4	WG-12595539-100422-KM-009	10/04/22	1335	WG	G	N	X		X	X											5		
5	WG-12595539-100522-KM-010	10/05/22	1010	WG	G	N		X													3		
6	WG-12595539-100422-KM-011	10/04/22	1335	WG	G	N	X		X	X											5		
7	WG-12595539-100522-KM-012	10/05/22	1204	WG	G	N	X		X	X		X									8		
8	WG-12595539-100522-KM-013	10/05/22	0925	WG	G	N	X		X	X											5		
9	WG-12595539-100522-KM-014	10/05/22	1338	WG	G	N		X													3		
10	WG-12595539-100522-KM-015	10/05/22	1055	WG	G	N		X													3		
11	WG-12595539-100622-KM-016	10/06/22	1010	WG	G	N	X		X	X	X										7		
12	WG-12595539-100522-KM-017	10/05/22	1220	WG	G	N	X		X	X		X									8		

480-202439 Chain of Custody

TAT Required in business days (use separate COCs for different TATs):

☐ ☐1 Day ☑2 Days ☐3 Days ☐1Week ☑2Week

Notes/ Special Requirements:

* phosphate buffer & Ammonium chloride Temp 3.2 2 Lt#1 ICE

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
	GHD	10/06/22	1350	1.	TA	10/6/22	1437
				2.			
				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form COC 10/24/2022

CHAIN OF CUSTODY RECORD

COC NO.: 60065

PAGE 2 OF 2

GHD

Address: 2055 Niagara Falls Blvd

Phone: 716 297 6150 Fax:

Project No/ Phase/Task Code: 12595539-DEL.001	Laboratory Name: Eurofins	Lab Location: Amherst NY	SSOW ID:
Project Name: Cascades Paper Annual GW	Lab Contact: Denise Heckler		Cooler No:
Project Location: Niagara Falls NY			Carrier: Hand Delivered
GHD Chemistry Contact: Sheri Finn			Airbill No:
Sampler(s): K. Miller J. Kaweck D. Tyran			Total # of Containers: See Page 1

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	SSPL VOCs	Total VOCs	SSPL Metals	Phenols	1,4 Dioxane	Chloral Picrin								Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)						HC	HC	HN	HZ		*										
1	WG-12595539-100622-KM-018	10/06/22	1200	WG	G	N	X		X	X										5		
2	WG-12595539-100522-KM-019	10/05/22	1340	WG	G	N	X		X	X		X								8		
3	WG-12595539-100622-KM-020	10/06/22	1110	WG	G	N	X		X	X	X									7		
4	TB-12595539-101422-	10/04/22	0900	TB	G	N		X												2		
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

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TAT Required in business days (use separate COCs for different TATs):

☐ ☐1 Day ☑2 Days ☐3 Days ☐1Week ☐2Week

Notes/ Special Requirements:

* Phosphate buffer and Ammonium chloride

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
KM	GHD	10/06/22	1350	1. [illegible]	TA	10/6/22	1437
				2.			
				3.			

10/24/2022

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

Eurofins Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 480-75875.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@et.eurofinsus.com	State of Origin: New York	Page: Page 1 of 1
Company: Eurofins Eaton Analytical		Accreditations Required (See note): NELAP - New York		Job #: 480-202439-1
Address: 110 S Hill Street, ,	Due Date Requested: 10/19/2022			
City: South Bend	TAT Requested (days):			
State, Zip: IN, 46617				
Phone: 574-233-4777(Tel) 574-233-8207(Fax)	PO #:			
Email:	WO #:			
Project Name: 11109628, Cascades	Project #: 48017427			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, 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)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	551.1/551.1_Prep (MOD) Chloropicrin	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
WG-12595539-100522-KM-012 (480-202439-7)	10/5/22	12:04 Eastern		Water			X	3	
WG-12595539-100522-KM-017 (480-202439-12)	10/5/22	12:20 Eastern		Water			X	3	
WG-12595539-100522-KM-019 (480-202439-14)	10/5/22	13:40 Eastern		Water			X	3	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northeast, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	10-7-22 1800	TAB	Penny Pehling Wright	10/08/22 0745	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Client Provided Sample Container

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: Wet	Initial Temp: -0.4 Corrected Temp: 0.4 IR Gun #

Ver: 06/08/2021

10/24/2022

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-202439-1

Login Number: 202439
List Number: 1
Creator: Yeager, Brian A

List Source: Eurofins Buffalo

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	
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	GHD
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-202439-1

Login Number: 202439
List Number: 2
Creator: Pehling-Wright, Penny

List Source: Eurofins Eaton South Bend
List Creation: 10/10/22 08:51 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Attachment E

Institutional and Engineering Controls Certification Form

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. **932110**

Site Name ~~**Frontier Chemical - Royal Avenue**~~ Cascades Containerboard Packaging, Inc. - Royal Avenue

Site Address: 4626 Royal Avenue Zip Code: 14303
City/Town: Niagara Falls
County: Niagara
Site Acreage: 9.810

Reporting Period: November 18, 2021 to November 18, 2022

	YES	NO
1. Is the information above correct?	☐	☑
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☑
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☑
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☑
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☑

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Industrial	☑	☐
7. Are all ICs in place and functioning as designed?	☑	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative Date

SITE NO. 932110 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
160.09-1-6	4626 Royal Avenue Holding LLC	Ground Water Use Restriction Soil Management Plan Landuse Restriction Site Management Plan Monitoring Plan IC/EC Plan

Environmental Easement and Site Management Plan.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
160.09-1-6	Cover System

Twelve inch clean cover system consisting of crushed concrete or crushed stone with some asphalt.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the Engineering Control certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☑	☐

2. For each Engineering control listed in Box 4, I certify by checking "YES" below that all of the following statements are true:

   (a) The Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☑	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 932110

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I JOHNNY THEIN at 4001 PACKARD RD NIAGARA FALLS NY 14303
print name print business address

am certifying as PLANT MANAGER (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Johnny Thein 12/14/22
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification Date

EC CERTIFICATIONS

Box 7

Qualified Environmental Professional Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Richard J. Snyder (print name) at 2055 Niagara Falls Blvd, Niagara Falls NY (print business address)

am certifying as a Qualified Environmental Professional for the Remedial Party
(Owner or Remedial Party)

STATE OF NEW YORK
RICHARD J. SNYDER
No. 66242
LICENSED PROFESSIONAL ENGINEER

Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

12-9-22
Date