



January 31, 2024

Alberta Environment and Protected Areas (EPA)
Monitoring Branch
11th Floor Oxbridge Place
9820-106 Street
Edmonton, Alberta
T5K 2J6

RE: Monthly Ambient Air Monitoring Report
December 2023
Clean Harbors Canada, Inc. Approval 10348-03-01

To whom it may concern:

Clean Harbors Canada, Inc. (Clean Harbors) is presenting this Monthly Ambient Air Monitoring Report, which was prepared by GHD Limited (Consultant), for the reporting period of December 2023, to Alberta Environment and Protected Areas (EPA). The Clean Harbors Ryley Industrial Waste Management Facility (Facility) is located in SE 09-050-17 W4M near Ryley, Alberta.

This ambient air monitoring program is conducted in accordance with the requirements outlined in the facility's amended Environmental Protection and Enhancement Act (EPEA) Approval, Approval No. 10348-03-01 (Approval). Clean Harbors' original Ambient Air Monitoring Program for Approval No. 10348-03-00 was initially approved on June 24, 2009. As part of the amended Approval requirements, the Facility submitted an Enhanced Ambient Air Quality Monitoring Program to Alberta EPA on September 14, 2022 (no formal approval has been provided by Alberta EPA). Operating under the Approval and the submitted program, Clean Harbors operates the following ambient air monitoring stations:

- Wind
 - Facility Meteorological Station – EPA Station ID 00010348-C-1
 - Facility Site Station – EPA Station ID 00010348-C-2
 - Ryley School Station – EPA Station ID 00010348-C-3
- TSP
 - Facility Site Station – EPA Station ID 00010348-I-2
 - Ryley School Station – EPA Station ID 00010348-I-3
 - Highway 854 Lift Station – EPA Station ID 00010348-I-1
- PM₁₀
 - Highway 854 Lift Station – EPA Station ID 00010348-I-1

Included in this report are the following:

- Summary of the ambient air monitoring program for December 2023



- Summary of AMD Electronic Transfer System submittals
- Results for Total Suspended Particulate Matter (TSP) reported in $\mu\text{g}/\text{m}^3$
- Results for Particulate Matter ≤ 10 microns (PM_{10}) reported in $\mu\text{g}/\text{m}^3$
- Results for metals if the TSP or PM_{10} results were $>50 \mu\text{g}/\text{m}^3$
- Results for Total Non-Methane Organic Compounds (TNMOC) and Volatile Organic Compounds (VOC)
- Wind frequency distribution tables, wind rose and monthly uptime

Should there be any questions and comments regarding this report, please do not hesitate to contact the undersigned.

Yours truly,

CLEAN HARBORS CANADA INC.

A handwritten signature in blue ink that reads "Stan Yuha".

Stan Yuha

Facility Manager
Ryley Facility



Alberta Environment and Protected Areas (EPA)
Monthly Ambient Air Monitoring Report
December 2023
Report Completed on January 31, 2024

Clean Harbors Environmental Services Inc.
Approval Number: 10348-03-01
Ryley Facility, Alberta

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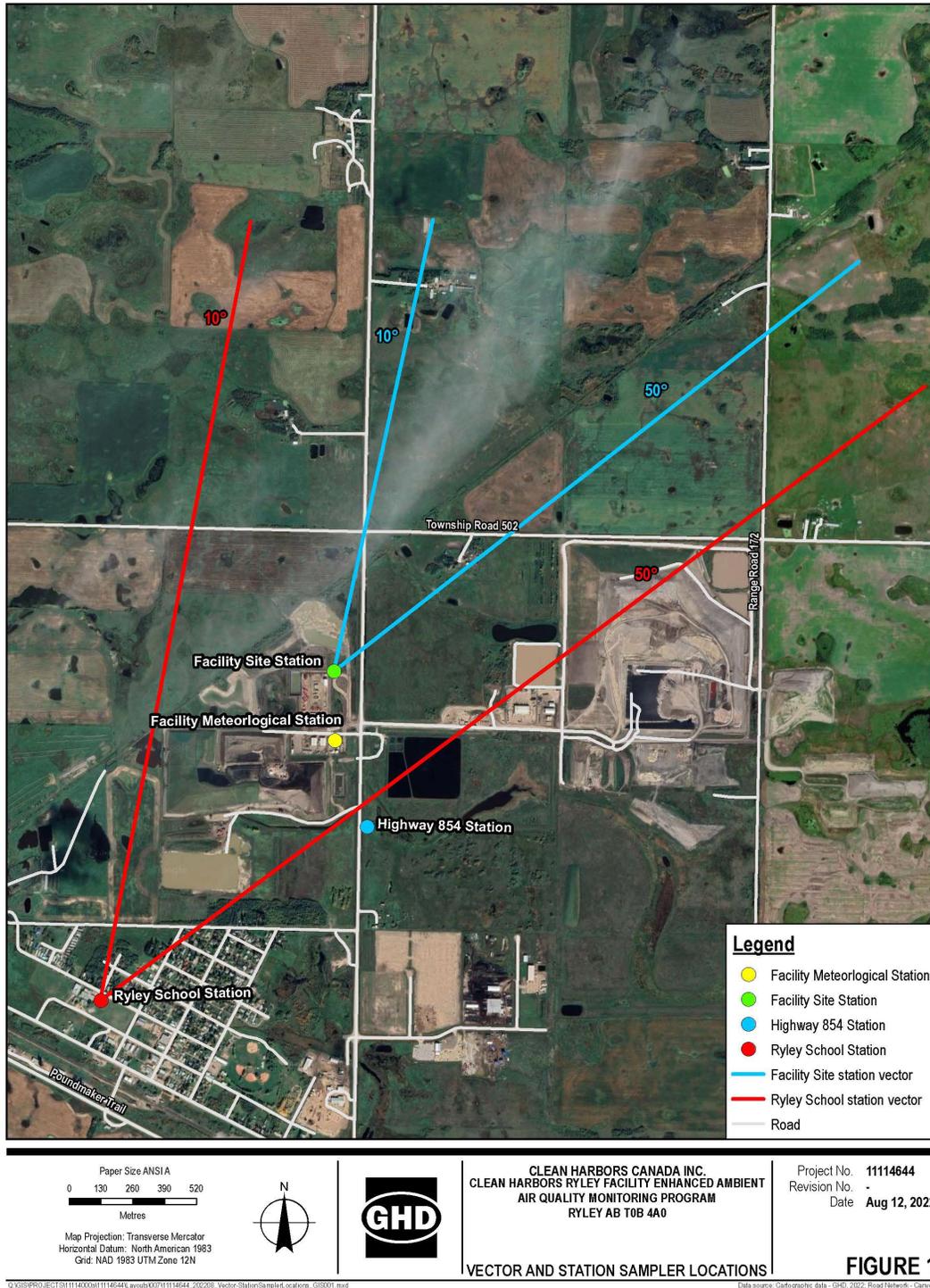
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Appendices

- Appendix A Meteorological Station Calibration Reports
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- Appendix D Chain of Custody Forms and Laboratory Analytical Reports
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1. Introduction

The Facility operates the following ambient air monitoring stations to assess ambient air quality at and around the Facility as shown in Figure 1.



1. Upwind intermittent ambient air quality monitoring station, known as the Facility Site Station (EPA Station ID 00010348-I-2), located at 50114 Range Road 173, Ryley, Alberta (53°18'13.11"N and 112°25'5.81"W). At this location, a Tisch TE-5170V VFC High Volume TSP Sampler (TSP Hi-Vol Sampler) is located against the Facility perimeter fence, north of the vehicle staging road.
2. Downwind intermittent ambient air quality monitoring station, known as the Ryley School Station (EPA Station ID 00010348-I-3), located at 5211 52 Avenue, Ryley, Alberta (53°17'28.99"N and 112°25'55.81"W). At this location, a TSP Hi-Vol Sampler is located on the roof of the Ryley School.

For these two locations, samples are collected and analyzed for the following: total suspended particulate matter (TSP) (typically with diameter less than 35 microns (μm)). Additionally, TSP samples that exceed 50 micrograms per cubic metre ($50 \mu\text{g}/\text{m}^3$) are analyzed for a target list of metals. The samplers are programmed to run for approximately 24-hours. All samples are collected for a total of 24-hours by intermittent sampling when the wind speed is greater than 5 km/hr and wind direction is blowing from the northeast towards the southwest.

3. Intermittent monitoring station, known as the Highway 854 Lift Station (EPA Station ID 00010348-I-1), located on Secondary Road 854, approximately 350 metres southeast of the Facility (Latitude: 53°17'52.66"N, Longitude: 112°24'57.87"W). At this location, a TSP Hi-Vol Sampler and a Partisol FRM 2000 PM₁₀ Sampler (PM₁₀ Sampler) will be located on the roof of the lift station. Samples are collected and analyzed for the following: TSP, particulate matter less than or equal to 10 μm in diameter (PM₁₀), volatile organic compounds (VOCs), and total non-methane organic compounds (TNMOC). Additionally, TSP or PM₁₀ samples that exceed $50 \mu\text{g}/\text{m}^3$ are analyzed for a target list of metals. Sampling is conducted once every 6-days for a 24-hour sampling period (midnight to midnight) as required by the Facility's Approval. The 6-day sampling frequency will be in alignment with the Government of Canada, National Air Pollution Surveillance Program ([National Air Pollution Surveillance Program – Canada.ca](https://www3.internationalairpollution.com/)). To correlate PM₁₀ data with TSP data, Clean Harbors will continue PM₁₀ sampling at the station for a two-year period.
4. Continuous meteorological stations that collect wind speed and wind direction data are also located at the Facility Meteorological Station (EPA Station ID 00010348-C-1), Upwind Facility Site Station (EPA Station ID 00010348-C-2), and Downwind Ryley School Station (EPA Station ID 00010348-C-3). The anemometer equipment used to measure this data includes three R. M. Young 05305-10A Wind Monitor-Aqs.

All sampling and monitoring is conducted in accordance with the Facility's amended Approval (Approval No. 10348-03-01), the Alberta Air Monitoring Directive, 2016 (AMD), and in accordance with the following EPA standards:

- The *Alberta Stack Sampling Code*, Alberta Environment, 1995, as amended
- The *Methods Manual for Chemical Analysis of Atmospheric Pollutants*, Alberta Environment, 1993, as amended
- The *Air Monitoring Directive*, Alberta Environment, 1989, as amended

1.1 Contact Information

As required by AMD Chapter 9, Section 2, contact information is provided for the following Facility personnel and Contractors that assisted with the performance of the Facility's Air Monitoring Program.

Contact Information	
Name	Mr. Stan Yuha
Title	Plant Manager
Company	Clean Harbors
Responsibilities	Report Certifier/ETS Submitter
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Responsibilities	Station Field Operator and Field Sampler
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2. Summary of Ambient Air Monitoring Activities

The following ambient air monitoring activities were conducted during the month of December 2023.

<i>Activity</i>	<i>Completed (Y/N)</i>	<i>Date(s)</i>
Wind – Facility Meteorological Station		
Wind Speed/Direction Sensor Calibration	N	June 30, 2023 ⁽¹⁾
Changes to the Wind Speed/Direction Sensor	N	-
Wind – Facility Site Station		
Wind Speed/Direction Sensor Calibration	N	Anemometer Error ⁽²⁾
Changes to the Wind Speed/Direction Sensor	N	-
Wind – Ryley School Station		
Wind Speed/Direction Sensor Calibration	Y	June 30, 2023
Changes to the Wind Speed/Direction Sensor	N	-
TSP – Facility Site Station		
TSP Hi-Vol Sampler Calibration	Y	December 13, 2023
Changes to the TSP Hi-Vol Sampler	N	-
TSP Samples Collected	Y	December 1, 2023 – January 1, 2024
TSP Metal Analysis Conducted	Y	December 1, 2023 – January 1, 2024
TSP Sampler Maintenance Activities	Y	December 1, 2023 December 13, 2023
TSP – Ryley School Station		
TSP Hi-Vol Sampler Calibration	Y	December 13, 2023
Changes to the TSP Hi-Vol Sampler	N	-
TSP Samples Collected	Y	December 1, 2023 – January 1, 2024
TSP Metal Analysis Conducted	Y	December 1, 2023 – January 1, 2024
TSP Sampler Maintenance Activities	Y	December 1, 2023 December 13, 2023
TSP, PM₁₀, VOC and TNMOC – Highway 854 Lift Station		
TSP Hi-Vol Sampler Calibration	Y	December 13, 2023
PM ₁₀ Sampler Calibration	Y	December 13, 2023
Changes to the TSP Hi-Vol Sampler	N	-
Changes to the PM ₁₀ Sampling Station	N	-
TSP Samples Collected	Y	December 2, 2023 December 8, 2023 December 14, 2023 December 20, 2023 December 26, 2023
PM ₁₀ Samples Collected	Y	December 2, 2023

<i>Activity</i>	<i>Completed (Y/N)</i>	<i>Date(s)</i>
		December 8, 2023 December 14, 2023 December 20, 2023 December 26, 2023
VOC and TNMOC Samples Collected	Y	December 2, 2023 December 8, 2023 December 14, 2023 December 20, 2023 December 26, 2023
TSP Metal Analysis Conducted	Y	December 2, 2023
PM ₁₀ Metal Analysis Conducted	Y	December 2, 2023
TSP Sampler Maintenance Activities	Y	December 2, 2023 December 8, 2023 December 13, 2023 December 14, 2023 December 20, 2023 December 26, 2023
PM ₁₀ Sampler Maintenance Activities	Y	December 2, 2023 December 8, 2023 December 13, 2023 December 14, 2023 December 20, 2023 December 26, 2023
Other		
Dust Suppression Activities	N	-
<p>Note: (1) The wind speed/direction sensor on the Facility Site Meteorological Station was checked for calibration on June 30, 2023 and was shown to be within the allowable tolerances and was then re-installed after calibration.</p> <p>(2) Instrument is not currently reporting due to anemometer program corruption. The instrument was calibrated prior to install in the Fall of 2014 for voluntary reporting.</p>		

3. Summary of Electronic Transfer System (ETS) Submittals

In addition to the December 2023 monthly report, the following summarized items were submitted to the ETS:

3.1 AMD XML Schema

An XML formatted Schema file was submitted to the Alberta EPA via the ETS portal. The XML Schema file contains the results from:

- Wind
 - Facility Meteorological Station – EPA Station ID 00010348-C-1.

- Facility Site Station – EPA Station ID 00010348-C-2.
- Ryley School Station – EPA Station ID 00010348-C-3.
- TSP
 - Facility Site Station – EPA Station ID 00010348-I-2.
 - Ryley School Station – EPA Station ID 00010348-I-3.
 - Highway 854 Lift Station – EPA Station ID 00010348-I-1.
- PM₁₀
 - Highway 854 Lift Station – EPA Station ID 00010348-I-1.

3.2 Ambient Air Monitoring Program Laboratory Reports

One laboratory report in PDF file format was submitted to the Alberta EPA via the ETS portal. The PDF file contains the results from EPA Station ID 00010348-I-1, EPA Station ID 00010348-I-2, and EPA Station ID 00010348-I-3.

3.3 Ambient Air Monitoring Program Calibration Reports

One calibration report in PDF file format was submitted to the Alberta EPA via the ETS portal. The PDF file contains the results from EPA Station ID 00010348-C-1.

4. Calibration and Operation & Maintenance (O&M) Activities

4.1 Facility Meteorological Station for Wind Speed and Direction (EPA Station ID 00010348-C-1)

The Facility Meteorological Station was taken down and calibrated on June 30, 2023. The station was shown to be within all allowable tolerances, as required by the manufacturer, and was then re-installed after calibration. Provided in Appendix A is the calibration report and record of installation.

4.2 Facility Site Station for Wind Speed and Direction (EPA Station ID 00010348-C-2)

The Facility Site Station was last calibrated upon installation. When installed, the station was shown to be within all allowable tolerances, as required by the manufacturer.

During May 2023, Clean Harbors chose to swap the Ryley School Station (EPA Station ID 00010348-C-3) anemometer with the Facility Site Station (EPA Station ID 00010348-C-2) anemometer due to EPA Station ID 00010348-C-3 anemometer program corruption. Per Approval No. 10348-03-01, Clean Harbors is only required to report "a minimum of one (1) meteorological station in each of the Ryley School and Facility Site intermittent ambient air quality monitoring stations" thus, reporting from Station ID 00010348-C-2 is not required as Clean Harbors reports from the Facility Meteorological Station (Station ID 00010348-C-1).

4.3 Ryley School Station for Wind Speed and Direction (EPA Station ID 00010348-C-3)

The Ryley School Station was taken down and calibrated on June 30, 2023. The station was shown to be within all allowable tolerances, as required by the manufacturer, and was then re-installed after calibration. Provided in Appendix A is the calibration report.

4.4 Facility Site Station TSP Hi-Vol Sampler (EPA Station ID 00010348-I-2)

The sampling activities for the Tisch TE-5170V VFC High Volume TSP Sampler (TSP Hi-Vol Sampler) are recorded in the field sampling sheets provided in Appendix B.

On a quarterly basis, performance audits are completed on the TSP Hi-Vol Sampler. A quarterly audit was performed on December 13, 2023.

4.5 Ryley School Station TSP Hi-Vol Sampler (EPA Station ID 00010348-I-3)

The sampling activities for the TSP Hi-Vol Sampler are recorded in the field sampling sheets provided in Appendix B.

On a quarterly basis, performance audits are completed on the TSP Hi-Vol Sampler. A quarterly audit was performed on December 13, 2023.

4.6 Highway 854 Lift Station TSP Hi-Vol Sampler (EPA Station ID 00010348-I-1)

The sampling activities for the TSP Hi-Vol Sampler are recorded in the field sampling sheets provided in Appendix B.

On a quarterly basis, performance audits are completed on the TSP Hi-Vol Sampler. A quarterly audit was performed on December 13, 2023.

4.7 Highway 854 Lift Station PM₁₀ Sampler (EPA Station ID 00010348-I-1)

Maintenance activities for the Thermo Scientific™ Partisol 2000i-Federal Reference Method (FRM) PM₁₀ Sampler included inlet cleaning and leak checks that were conducted before each sampling event in December 2023. The pre-sampling maintenance activities are recorded in the field sampling sheets provided in Appendix B.

On a quarterly basis, performance audits are completed on the TSP Hi-Vol Sampler. A quarterly audit was performed on December 13, 2023.

5. Ambient Air Monitoring Results

The following section presents the results from the ambient air monitoring program for the Facility Meteorological Station (EPA Station ID 00010348-C-1), Facility Site Station (EPA Station

ID 00010348-C-2), Ryley School Station (EPA Station ID 00010348-C-3), Highway 854 Lift Station (EPA Station ID 00010348-I-1), Facility Site Station (EPA Station ID 00010348-I-2), and Ryley School Station (EPA Station ID 00010348-I-3) conducted in June 2023. Where applicable, comparisons were made to Alberta Ambient Air Quality Objectives (AAAQO) for parameters that had 24-hour average objectives. These parameters are TSP and some of the VOCs including o,m,p-xylene, hexane, and toluene. For the parameter objectives with averaging periods other than 24-hours, Section 7.1.2 of the Air Quality Model Guideline was used to convert the measured values to the corresponding AAAQO averaging periods prior to comparison. For all other parameters, AAAQO have not been established.

5.1 Meteorological Data for Wind Speed and Direction

In accordance with the Approval and the AMD, the Facility is required to collect wind speed and directional data continuously for the Facility Meteorological Station, Facility Site Station, and Ryley School Station. Tables 1 - 3 present the hourly and 24-hour average wind speeds, Tables 4 - 6 present the hourly and 24-hour most frequent wind direction data (degrees from north), and Tables 7 - 9 present the Wind Class Frequency Distribution for December 2023 from the Facility Meteorological Station, Facility Site Station, and Ryley School Station, respectively. Appendix C provides graphical representations of the Wind Class Frequency Distribution and the Wind Roses based on Tables 1 – 9.

5.1.1 Facility Meteorological Station Data Verification and Validation and Uptime (EPA Station ID 00010348-C-1)

Based on the verification and validation process conducted for the meteorological data that was collected in December 2023, it was determined that 100 percent of the data is valid, which represents 100 percent uptime of the meteorological station. This is above the 90 percent uptime limit required for compliance, as per the Approval.

5.1.2 Facility Site Station Data Verification and Validation and Uptime (EPA Station ID 00010348-C-2)

As noted above, Clean Harbors chose to swap the Ryley School Station (EPA Station ID 00010348-C-3) anemometer with the Facility Site Station (EPA Station ID 00010348-C-2) anemometer due to EPA Station ID 00010348-C-3 anemometer program corruption. Per Approval No. 10348-03-01, Clean Harbors is only required to report "a minimum of one (1) meteorological station in each of the Ryley School and Facility Site intermittent ambient air quality monitoring stations" thus, reporting from Station ID 00010348-C-2 is not required as Clean Harbors reports from the Facility Meteorological Station (Station ID 00010348-C-1).

5.1.3 Ryley School Station Data Verification and Validation and Uptime (EPA Station ID 00010348-C-3)

Based on the verification and validation process conducted for the meteorological data that was collected in December 2023, it was determined that 100 percent of the data is valid, which represents 100 percent uptime of the meteorological station. This is above the 90 percent uptime limit required for compliance, as per the Approval.

5.2 TSP Concentrations

AAAQO are specified for TSP at $100 \mu\text{g}/\text{m}^3$ (24-hour averaging period). In accordance with the Facility's Approval, TSP samples that exceed $50 \mu\text{g}/\text{m}^3$ are analyzed for a target list of metals. Appendix B provides the field sheets completed for each sampling event. Appendix D provides the chain of custody forms and laboratory analytical reports.

5.2.1 Facility Site Station (EPA Station ID 00010348-I-2)

Table 10 presents the results of the sampling conducted for TSP from the Facility Site Station. The TSP sample collected in December 2023 was shown to have an elevated TSP concentration of $189.374 \mu\text{g}/\text{m}^3$, which is above the $100 \mu\text{g}/\text{m}^3$ AAAQO threshold. The Facility Site Station is downwind from other potential sources in the area (upwind of the Facility sources) and as a result there is likely other contributing factors outside of the Facility causing this exceedance. The Facility Site Station is used as a baseline of the background air quality, and the Ryley School Station and Highway Lift Station are compared to analyze the Facility's effect on the air quality. The TSP exceedance for December 2023 is likely a result of the background air quality and not related to the Facility. As such, no contravention form was submitted due to this exceedance.

5.2.2 Ryley School Station (EPA Station ID 00010348-I-3)

Table 11 presents the results of the sampling conducted for TSP from the Ryley School Station. The TSP sample collected in December 2023 was shown to have an elevated TSP concentration of $161.860 \mu\text{g}/\text{m}^3$, which is above the $100 \mu\text{g}/\text{m}^3$ AAAQO threshold. It should be noted that the Ryley School Station is located downwind of the Facility Site Station and the Ryley School Station only collects samples when the wind direction is blowing from northeast to the southwest. Therefore, the exceedance at the Ryley School station is likely due to the high baseline concentration measured at the Facility Site Station which is likely a result of other contributing factors outside of the Facility. The TSP exceedance for December 2023 is likely a result of the background air quality and not related to the Facility. As such, no contravention form was submitted due to this exceedance.

5.2.3 Highway 854 Lift Station (EPA Station ID 00010348-I-1)

Table 12 presents the results of the sampling conducted for TSP from the Highway 854 Lift Station. None of the samples analyzed in December 2023 were shown to have elevated TSP concentration above the $100 \mu\text{g}/\text{m}^3$ AAAQO threshold.

5.3 PM₁₀ Concentrations

AAAQO are specified for TSP at $100 \mu\text{g}/\text{m}^3$ and Particulate Matter ≤ 2.5 microns (PM_{2.5}) at $29 \mu\text{g}/\text{m}^3$ (24-hour averaging period). There is currently no AAAQO specified for PM₁₀ for a 24-hour averaging period in Alberta. To correlate PM₁₀ data with TSP data, Clean Harbors will continue PM₁₀ sampling at the station for a two-year period. In accordance with the Facility's Approval, PM₁₀ samples that exceed $50 \mu\text{g}/\text{m}^3$ are analyzed for a target list of metals. Appendix B provides the field sheets completed for each sampling event. Appendix D provides the chain of custody forms and laboratory analytical reports.

5.3.1 Highway 854 Lift Station (EPA Station ID 00010348-I-1)

Table 13 presents the results of the sampling conducted for PM₁₀.

5.4 VOC and TNMOC Concentrations

There are three VOC parameters that have corresponding AAAQO with 24-hour averaging periods including o,p,m-xylene, hexane and toluene. Appendix B provides the field sheets completed for each sampling event. Appendix D provides the chain of custody forms and laboratory analytical reports.

5.4.1 Highway 854 Lift Station (EPA Station ID 00010348-I-1)

Table 14 presents the VOC and TNMOC concentrations measured in December 2023. There were no exceedances for the parameters with AAAQO in December 2023.

5.5 Metal Concentrations

In accordance with the Facility's Approval, if collected TSP or PM₁₀ samples show exceedances over 50 µg/m³ after gravimetric analysis, a subsequent filter particulate analysis is done using inductively coupled plasma mass spectroscopy (ICP-MS) for 21 trace elements. There are four parameters that have corresponding AAAQO with 1-hour averaging periods including arsenic, chromium, lead, nickel, and manganese. The sample results were converted to a 1-hour averaging period for comparison with the sample AAAQO. If metal analysis was conducted, Appendix B provides the field sheets completed for each sampling event. Appendix D provides the chain of custody forms and laboratory analytical reports.

5.5.1 Facility Site Station (EPA Station ID 00010348-I-2)

The TSP sample collected in December 2023 was above 50 µg/m³ and as such, analysis for metals was conducted on the sample. Facility Test #109 (HV-23-02-17) was shown to have an elevated TSP concentration of 189.374 µg/m³, which is over the 50 µg/m³ threshold. This sample was sent for additional analysis and the results for this test can be found in Table 15 of this report. There were no exceedances for the parameters with AAAQO in December 2023.

5.5.2 Ryley School Station (EPA Station ID 00010348-I-3)

The TSP sample collected in December 2023 was above 50 µg/m³ and as such, analysis for metals was conducted on the sample. School Test #109 (HV-23-02-18) was shown to have an elevated TSP concentration of 161.860 µg/m³, which is over the 50 µg/m³ threshold. This sample was sent for additional analysis and the results for this test can be found in Table 16 of this report. There were no exceedances for the parameters with AAAQO in December 2023.

5.5.3 Highway 854 Lift Station (EPA Station ID 00010348-I-1)

TSP

One of the five TSP samples analyzed in December 2023 were above 50 µg/m³ and as such, analysis for metals was conducted on the samples. Facility Test #875 (HVF-23-10-03) was shown to have an elevated TSP concentration of 55.433 µg/m³, which is over the 50 µg/m³ threshold. This

sample was sent for additional analysis and the results for Test #875 can be found in Table 17 of this report. There were no exceedances for the parameters with AAAQO in December 2023.

PM₁₀

None of the PM₁₀ samples analyzed in December 2023 were above the 50 µg/m³. The PM₁₀ concentration measured for Facility Test #875 (AT85238) was less than the 50 threshold, 29.836 µg/m³; however, as the TSP concentration for this sample was above the 50 µg/m³ threshold (as noted above), the corresponding PM₁₀ sample were sent for analysis. The results for Test #875 can be found in Table 18 of this report. There were no exceedances for the parameters with AAAQO in December 2023.

The remainder of the TSP and PM₁₀ samples collected in December 2023 were below 50 µg/m³ and as such analysis for metals was not conducted on those samples.

5.6 Dust Suppression

There were no dust suppression activities, which include using leachate spread on the surface of the active landfill, conducted during December 2023.

6. Conclusions

The following summarizes the Ambient Air Monitoring Program that was conducted in December 2023.

- 1 During December 2023, the Facility Meteorological Station (EPA Station ID 00010348-C-1) operated at 100 percent uptime. Based on the data verification and validation procedure conducted, this is in compliance with the minimum 90 percent uptime required by the AMD.
- 2 During December 2023, the continuous Facility Site wind Station was not operational. Per the approval, reporting from Station ID 00010348-C-2 is not required as Clean Harbors reports from the Facility Meteorological Station.
- 3 During December 2023, the continuous Ryley School wind Station operated at 100 percent uptime. Based on the data verification and validation procedure conducted, this is in compliance with the minimum 90 percent uptime required by the AMD.
- 4 The TSP concentration measured at the intermittent Facility Site Station from December 1, 2023 to January 1, 2024 was 189.374 µg/m³. The AAAQO exceedance for this month is likely a result of the background air quality and not related to the Facility.
- 5 The TSP concentration measured at the intermittent Ryley School Station from December 1, 2023 to January 1, 2024 was 161.860 µg/m³. The AAAQO exceedance for this month is likely a result of the background air quality and not related to the Facility.
- 6 The TSP concentrations measured at the intermittent Highway 854 Lift Station (EPA Station ID 00010348-I-1) on December 2, December 8, December 14, December 20, and December 26 were 55.433 µg/m³, 17.391 µg/m³, 16.643 µg/m³, 12.748 µg/m³, and 13.175 µg/m³, respectively.

- 7 The PM₁₀ concentrations measured at the intermittent Highway 854 Lift Station (EPA Station ID 00010348-I-1) on December 2, December 8, December 14, December 20, and December 26 were 29.836 µg/m³, 7.390 µg/m³, 4.232 µg/m³, 6.352 µg/m³, and 2.893 µg/m³ respectively.
- 8 Based on the VOC and TMNOC results measured at the intermittent Highway 854 Lift Station (EPA Station ID 00010348-I-1), no exceedances were detected for parameters with applicable AAAQO, which included o,m,p-xylene, hexane and toluene. There are no applicable AAAQO for other parameters that were monitored in December 2023.
- 9 The TSP concentration measured for Facility Test #109 (HV-23-02-17), conducted from December 1, 2023 to January 1, 2024, was above the 50 µg/m³ threshold outlined in the Facility's approval. Because of the elevated TSP concentration, this sample was sent for additional analysis of metals. The results of this test showed that all parameters were below any applicable AAAQO (arsenic, chromium, lead, nickel, and manganese).
- 10 The TSP concentration measured for School Test #109 (HV-23-02-18), conducted from December 1, 2023 to January 1, 2024, was above the 50 µg/m³ threshold outlined in the Facility's approval. Because of the elevated TSP concentration, this sample was sent for additional analysis of metals. The results of this test showed that all parameters were below any applicable AAAQO (arsenic, chromium, lead, nickel, and manganese).
- 11 The TSP concentrations measured for Facility Test #875 (HVF-23-10-03) was over the 50 µg/m³ threshold outlined in the Facility's approval. Because of the elevated TSP concentration, this sample was sent for additional analysis of metals. The results of this test showed that all parameters for Test #875 were below any applicable AAAQO (arsenic, chromium, lead, nickel, and manganese).
- 12 None of the PM₁₀ concentrations measured were over the 50 µg/m³ threshold outlined in the Facility's approval. The PM₁₀ concentration measured for Facility Test #875 (AT85238) was less than the 50 µg/m³ threshold; however, as the TSP concentration for this sample was above the 50 µg/m³ threshold, the corresponding PM₁₀ sample was sent for additional analysis. The results of this test showed that all parameters for Test #875 were below any applicable AAAQO (arsenic, chromium, lead, nickel, and manganese).

Clean Harbors will continue to perform their Facility's Ambient Air Monitoring Program in accordance with their Approval and the AMD and evaluate the data to determine impacts on the ambient air quality.

7. Certification

Per the requirements of AMD, Chapter 9, Section 2.3, the following certification is provided for the December 2023 Ambient Air Monitoring Report.

"I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements."

A handwritten signature in blue ink that reads "Stan Yuha". The signature is written in a cursive style with a large initial 'S'.

Stan Yuha

Plant Manager/Report Certifier

END OF REPORT

Tables

TABLE 1

Average Wind Speed (metres/second)
 EPA Station ID 00010348-C-1
 Clean Harbors Canada, Inc.
 Monthly Ambient Air Monitoring Report
 December 2023

Ryley Wind Speed Data (m/s) - Month of December 2023																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.8	2.8	2.2	1.8	1.7	2.6	1.9	3.1	3.4	3.4	3.6	4.7	5.1	4.6	4.4	3.5	1.2	0.9	1.7	2.0	1.4	2.3	2.4	3.3
2	1.8	1.9	2.5	3.3	4.6	2.1	3.0	2.4	2.4	2.5	3.7	2.5	2.7	2.7	2.1	2.5	1.8	1.6	1.1	0.7	1.5	2.6	2.3	3.3
3	2.9	2.4	2.7	3.7	3.3	2.4	3.5	5.3	5.6	5.5	3.2	2.6	3.7	4.5	4.9	5.3	4.6	4.0	3.3	3.7	3.9	2.3	3.8	3.2
4	2.1	1.7	2.5	3.8	4.8	5.1	5.1	4.9	5.6	6.1	5.3	5.3	4.6	4.3	3.8	2.7	3.9	3.0	3.1	2.2	2.5	3.1	3.4	3.0
5	3.3	3.4	4.0	3.8	3.6	4.4	5.9	4.5	4.9	4.2	3.4	2.0	2.9	3.1	4.3	3.3	2.9	3.3	3.2	3.1	4.1	4.0	3.5	3.3
6	4.4	6.1	6.3	5.5	3.2	1.7	2.0	2.2	2.2	1.7	0.8	0.4	0.6	1.8	1.6	1.4	1.2	1.0	1.6	1.7	0.8	1.0	1.3	1.4
7	1.7	2.3	1.4	2.3	2.8	3.4	3.9	5.0	5.6	5.0	4.2	3.3	2.8	2.5	2.7	3.9	3.1	3.0	3.2	3.9	3.9	4.4	4.2	3.2
8	3.7	4.2	4.7	4.6	4.3	4.1	4.1	3.6	3.4	3.5	3.3	1.4	1.7	2.7	1.9	2.7	3.9	4.1	5.0	5.3	4.1	3.9	3.9	4.6
9	3.6	5.2	5.1	5.4	5.9	6.1	6.9	6.5	6.1	6.4	6.2	6.0	4.5	3.7	2.9	2.1	3.2	4.2	4.9	5.2	4.7	4.4	4.7	4.5
10	2.6	2.5	2.6	2.7	3.1	3.3	3.2	2.2	5.4	4.6	4.2	5.1	6.0	5.4	4.6	4.9	4.9	4.3	2.3	3.1	4.0	4.4	4.2	3.9
11	5.1	4.4	3.6	5.3	5.5	8.0	6.9	7.2	6.7	4.4	3.6	4.0	2.9	1.6	1.8	2.9	3.6	3.8	3.3	4.3	4.5	4.3	4.4	5.3
12	4.0	5.4	5.7	3.8	2.1	2.3	4.7	5.9	6.9	5.9	6.2	6.1	5.9	5.9	6.1	6.0	4.8	4.4	6.3	4.7	4.9	5.2	3.3	2.6
13	3.5	4.6	4.4	4.5	5.1	4.9	4.6	4.0	5.3	3.8	2.9	3.3	3.6	3.5	4.1	4.6	4.4	4.6	3.1	2.6	3.3	3.5	4.7	5.3
14	5.6	5.2	4.2	3.1	4.1	3.9	3.5	4.0	4.6	3.8	3.7	2.9	2.6	2.3	2.7	2.7	1.6	3.0	3.1	3.3	2.4	1.1	2.1	2.7
15	2.9	1.6	2.0	3.6	2.8	4.0	4.4	3.6	4.1	4.0	3.9	5.4	5.5	5.9	5.6	5.6	6.3	5.8	5.7	5.0	5.5	5.8	3.0	2.7
16	3.2	3.1	3.6	3.0	3.6	4.3	5.4	5.7	5.4	4.0	3.5	3.4	3.5	2.7	2.3	3.2	4.1	4.2	4.0	4.3	4.3	5.2	7.6	8.5
17	11.4	9.0	8.1	6.6	5.7	5.4	5.5	4.3	5.0	7.1	5.9	5.4	4.1	3.1	3.3	3.2	3.9	3.5	3.4	3.9	3.7	2.9	2.1	2.4
18	3.7	4.7	5.0	7.5	7.1	6.7	7.0	7.8	6.8	4.5	4.7	4.5	3.3	2.7	2.1	1.9	0.4	0.9	2.6	2.2	1.2	2.2	1.8	2.2
19	1.7	1.1	0.9	1.6	1.6	2.8	1.8	2.8	3.1	3.7	4.1	4.8	5.6	6.1	5.8	6.4	6.6	7.2	7.2	7.1	7.0	7.3	7.3	6.3
20	4.7	4.9	6.2	5.4	5.0	4.1	3.3	3.2	2.3	1.9	3.1	3.5	2.9	1.6	0.9	2.1	3.4	2.5	2.3	2.4	1.7	2.3	2.3	2.9
21	3.3	3.6	4.8	3.8	2.1	1.9	2.2	3.0	3.3	2.6	3.7	3.9	3.8	5.1	5.2	4.9	5.7	4.6	4.5	5.1	5.1	4.2	3.5	3.8
22	4.0	3.1	3.3	3.6	2.4	3.4	3.5	3.3	3.1	3.1	3.0	3.4	3.1	3.5	4.5	2.6	3.0	2.9	3.9	3.8	4.5	6.3	7.5	7.8
23	6.4	7.4	8.5	7.4	9.0	9.4	9.2	8.7	8.6	8.2	6.2	5.1	4.7	6.5	6.6	5.7	3.9	4.1	4.4	4.3	4.2	4.5	5.4	6.1
24	6.7	6.6	6.7	5.4	5.1	4.3	4.8	4.7	4.1	3.0	2.9	4.3	4.0	4.5	4.3	4.1	3.2	2.6	4.0	5.0	4.9	3.1	3.0	2.6
25	2.1	2.3	2.6	2.1	2.6	1.9	1.8	3.1	2.3	2.9	3.4	2.2	1.1	0.6	1.0	2.2	3.2	3.0	2.2	3.3	3.8	3.0	3.7	4.1
26	4.4	3.8	4.1	3.7	4.3	4.0	4.3	5.4	4.7	4.6	4.5	3.1	3.9	3.5	1.9	1.3	1.5	5.3	4.0	5.2	4.3	4.4	6.2	5.4
27	5.3	6.5	6.4	2.4	1.1	1.6	2.7	1.7	2.1	3.1	3.6	4.2	5.1	5.8	5.3	4.7	5.9	5.9	6.2	6.6	6.1	6.2	5.6	6.4
28	5.4	5.1	4.7	3.6	2.3	1.0	1.1	3.0	3.5	3.4	1.4	0.8	2.1	3.6	3.5	3.6	4.7	5.3	5.4	6.4	7.3	7.2	6.5	5.1
29	2.6	2.0	1.9	3.5	4.1	2.7	1.6	1.9	1.5	1.7	1.3	0.6	1.7	1.8	1.5	2.2	1.9	1.6	2.8	2.8	2.1	2.6	3.0	2.8
30	2.8	2.8	3.6	3.2	4.0	3.9	3.9	4.4	4.2	5.5	6.0	5.4	5.8	6.2	6.6	7.3	6.9	5.7	5.9	4.4	4.0	5.0	5.1	3.2
31	1.9	2.5	3.2	3.2	2.4	3.0	4.0	1.6	1.5	1.2	1.0	0.9	2.5	0.7	0.6	0.4	0.4	1.4	1.7	3.7	4.0	3.1	2.7	3.1

TABLE 2

**Average Wind Speed (metres/second)
 EPA Station ID 00010348-C-2
 Clean Harbors Canada, Inc.
 Monthly Ambient Air Monitoring Report
 December 2023**

Ryley Wind Speed Data (m/s) - Month of December 2023																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	(X)																							
2	(X)																							
3	(X)																							
4	(X)																							
5	(X)																							
6	(X)																							
7	(X)																							
8	(X)																							
9	(X)																							
10	(X)																							
11	(X)																							
12	(X)																							
13	(X)																							
14	(X)																							
15	(X)																							
16	(X)																							
17	(X)																							
18	(X)																							
19	(X)																							
20	(X)																							
21	(X)																							
22	(X)																							
23	(X)																							
24	(X)																							
25	(X)																							
26	(X)																							
27	(X)																							
28	(X)																							
29	(X)																							
30	(X)																							
31	(X)																							

Notes:
 - (X) - Equipment Malfunction

TABLE 3

Average Wind Speed (metres/second)
EPA Station ID 00010348-C-3
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Ryley Wind Speed Data (m/s) - Month of December 2023																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.7	2.0	2.4	1.0	1.3	1.9	1.1	2.2	3.1	2.8	3.4	4.1	4.4	4.1	3.7	3.0	1.1	0.6	0.8	0.8	0.6	0.6	0.6	0.7
2	0.4	0.9	1.2	1.3	1.5	1.4	1.8	1.6	1.6	1.5	2.1	1.6	2.0	1.9	1.4	2.1	1.3	0.8	0.2	0.4	0.7	0.9	0.7	1.7
3	1.2	1.0	0.9	1.5	1.0	0.5	0.7	0.8	1.2	1.4	1.3	1.8	3.4	4.0	3.9	4.5	3.9	3.3	2.9	3.4	2.1	1.3	1.9	1.6
4	1.0	0.2	0.2	0.4	1.1	1.0	1.3	1.5	1.4	1.8	1.3	1.6	1.5	1.1	1.2	1.3	1.4	1.4	2.7	1.8	1.4	1.9	2.6	2.0
5	2.2	2.8	3.1	3.3	3.1	4.4	4.4	4.1	3.7	3.1	3.1	1.3	1.3	0.9	1.0	1.5	0.9	1.4	1.1	0.9	0.8	0.8	0.7	0.8
6	1.5	1.3	1.2	1.3	0.6	0.5	0.8	1.0	0.5	0.3	0.4	0.1	0.3	1.0	1.4	1.1	1.0	0.6	0.8	1.1	0.4	0.4	0.7	0.7
7	1.5	1.8	0.8	1.0	0.9	1.5	1.5	2.3	2.1	0.5	0.0	0.0	0.4	1.4	2.0	2.3	1.8	0.9	1.1	1.5	0.9	1.6	1.5	0.1
8	0.8	0.6	0.7	0.6	0.7	0.9	0.7	0.6	0.3	0.7	0.1	0.3	0.4	0.8	0.3	0.3	0.4	0.5	0.5	0.7	0.7	0.7	0.6	1.2
9	0.8	1.1	1.1	0.8	1.0	1.1	1.4	1.1	1.0	1.1	1.3	1.2	1.3	1.5	1.6	1.8	2.8	3.5	4.1	4.5	4.4	3.8	3.8	3.4
10	2.0	1.7	1.7	1.2	1.1	0.6	0.6	1.0	1.8	2.2	2.4	1.8	1.5	1.4	1.0	1.4	1.8	1.7	1.0	1.2	1.0	1.4	2.5	2.3
11	1.5	1.6	1.6	3.4	3.5	4.4	4.1	3.8	3.7	2.0	1.9	1.6	1.4	0.7	1.5	2.0	2.3	2.4	2.9	2.8	2.9	3.7	3.6	3.3
12	2.6	1.5	1.4	0.7	0.7	0.5	0.8	1.1	1.6	1.8	1.8	2.0	3.0	2.8	2.8	2.4	3.0	3.9	4.2	3.2	4.0	3.7	1.3	2.1
13	2.1	2.9	2.2	2.3	2.4	2.9	2.2	3.0	3.9	2.6	2.4	1.6	2.4	2.0	2.3	4.5	3.8	3.6	1.8	1.8	1.7	1.4	1.0	1.5
14	2.2	1.3	1.0	0.6	1.3	2.0	1.2	1.5	2.6	2.3	1.8	1.4	0.9	0.4	0.3	0.4	0.1	0.6	1.8	2.1	1.5	0.9	1.1	2.3
15	1.5	1.3	1.5	2.6	1.7	3.1	3.8	3.2	3.4	3.3	3.8	5.0	5.1	4.5	4.8	4.5	5.4	5.4	5.1	3.5	3.6	3.6	3.1	2.4
16	2.4	2.1	1.4	1.5	1.3	2.6	3.2	3.6	3.4	2.4	1.9	1.9	1.9	1.5	1.1	1.2	1.3	1.4	1.5	1.6	1.3	1.7	3.4	5.5
17	5.9	5.1	4.3	4.0	3.5	3.4	3.1	1.2	1.2	1.5	1.4	1.6	1.8	2.5	3.0	3.4	3.3	2.8	3.9	2.7	2.8	2.4	2.1	2.5
18	2.3	1.5	1.9	1.7	1.6	1.4	1.6	1.9	1.4	1.3	1.0	1.1	1.2	1.5	1.1	0.1	0.1	0.1	1.1	1.3	0.4	0.3	0.5	0.2
19	0.3	0.2	0.2	0.4	0.7	1.5	1.2	1.7	2.3	2.4	2.8	4.1	4.6	4.4	4.3	5.4	5.2	5.3	5.3	5.4	5.1	5.7	5.3	4.5
20	3.3	4.1	4.8	4.1	3.7	3.3	2.5	2.4	1.6	1.6	2.5	2.8	2.4	0.8	0.9	1.7	2.5	1.7	2.2	2.0	1.5	1.5	1.3	1.1
21	1.5	1.8	2.6	2.0	0.6	0.7	0.7	0.8	0.8	1.4	2.3	2.8	3.3	3.9	4.3	4.7	5.4	4.2	4.1	4.2	4.7	3.5	3.2	2.9
22	2.5	2.8	2.6	2.6	2.3	2.5	2.4	2.7	3.6	3.4	2.4	2.3	2.0	2.6	3.0	2.0	1.3	1.3	1.7	2.4	1.7	2.5	4.3	4.2
23	3.6	4.6	4.6	4.4	5.9	6.0	6.5	6.1	5.5	5.1	3.7	2.9	2.8	4.2	4.5	3.4	2.3	1.9	2.0	2.1	1.7	1.0	0.6	0.6
24	1.1	1.6	1.1	1.3	1.6	1.8	1.6	1.8	1.9	2.4	2.5	3.6	3.7	4.1	3.5	2.9	2.0	2.4	3.3	3.2	3.0	2.5	2.4	1.6
25	1.9	2.5	1.7	1.1	1.2	0.7	0.6	0.6	0.6	0.9	0.9	0.7	0.7	0.5	0.9	1.9	2.6	2.4	1.5	2.4	3.1	1.8	2.7	2.5
26	2.8	2.5	2.9	2.9	3.2	3.5	3.7	4.6	4.6	4.2	4.3	2.6	2.8	2.1	1.2	1.2	0.7	1.4	1.5	0.9	1.0	0.8	1.6	1.7
27	1.4	1.5	1.2	0.9	0.6	0.8	1.3	0.8	2.0	2.5	3.2	4.0	4.5	4.8	4.7	3.7	4.8	5.2	5.4	5.2	4.6	5.1	4.5	5.4
28	4.1	4.3	3.8	2.9	1.3	0.6	0.4	0.5	1.4	1.1	0.8	0.4	0.9	0.7	0.8	2.0	2.8	1.3	0.9	1.0	1.2	1.0	1.1	1.2
29	1.2	0.8	0.6	1.6	1.4	1.0	0.4	0.4	0.6	0.6	0.3	0.2	1.2	1.6	1.5	1.8	1.6	1.4	1.6	1.4	1.3	1.5	2.0	2.4
30	2.8	2.7	3.0	3.2	3.6	3.3	3.6	4.0	4.4	4.7	5.2	4.5	4.5	5.1	5.4	5.9	5.1	4.8	4.6	4.0	3.5	4.1	4.2	2.6
31	1.8	2.0	2.6	2.3	1.8	2.3	0.9	0.4	0.6	0.4	0.5	0.5	1.1	0.7	0.4	0.3	0.3	0.4	0.8	0.9	1.2	1.4	0.7	1.1

TABLE 4

**Average Wind Direction (degrees from North)
 EPA Station ID 00010348-C-1
 Clean Harbors Canada, Inc.
 Monthly Ambient Air Monitoring Report
 December 2023**

Ryley Wind Direction Data (degrees, blowing from) - Month of December 2023																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	163	160	128	99	95	94	94	94	94	87	89	92	106	114	111	109	108	113	89	107	196	188	150	179
2	165	147	169	172	179	141	160	150	133	130	110	106	87	108	77	104	85	97	148	196	234	253	268	259
3	262	260	249	246	250	250	209	186	176	173	174	174	170	160	128	123	102	105	111	118	200	252	257	261
4	263	225	218	206	180	191	187	188	187	184	190	185	186	189	193	185	175	160	168	127	73	73	83	92
5	83	97	100	107	112	111	151	120	114	111	125	154	207	184	208	262	273	267	267	241	215	242	229	202
6	179	185	197	209	232	225	250	241	200	134	203	184	235	90	108	130	118	113	109	113	109	132	197	174
7	168	93	180	315	319	333	338	341	336	332	328	320	307	284	264	279	270	260	238	252	248	256	263	242
8	244	244	248	252	253	258	258	260	243	257	207	238	245	263	237	198	193	234	222	227	236	232	233	239
9	235	247	241	227	181	47	38	23	28	30	43	67	114	161	169	105	86	83	81	83	84	79	86	98
10	105	99	112	155	160	153	178	153	173	182	184	192	189	190	205	226	248	246	280	270	258	250	268	286
11	304	300	269	277	274	301	308	314	312	294	263	240	253	218	167	170	166	166	136	106	107	105	118	151
12	180	179	188	232	240	223	208	184	135	152	169	175	185	175	180	180	178	177	175	172	168	168	173	131
13	150	165	176	177	179	167	169	161	168	142	127	155	145	162	156	164	170	169	185	164	181	183	217	229
14	294	310	309	309	301	290	251	264	301	300	299	267	255	235	191	202	199	188	181	172	182	248	122	115
15	184	170	112	162	178	172	170	150	120	135	137	128	116	138	147	137	136	142	133	147	150	159	156	152
16	157	154	181	273	297	280	278	280	278	280	286	294	272	253	264	183	211	199	197	201	208	214	243	295
17	315	315	317	309	293	277	271	249	193	216	201	188	180	179	160	142	140	144	150	144	141	129	114	122
18	174	178	171	143	155	174	170	177	180	187	190	231	259	266	260	234	168	52	30	49	307	294	288	296
19	287	275	198	36	38	19	52	43	53	50	50	55	58	59	59	57	61	57	57	59	63	71	70	70
20	78	78	70	86	90	99	101	103	118	125	109	120	158	206	159	110	104	145	136	147	161	149	194	250
21	260	275	277	279	279	269	259	193	180	161	148	145	129	123	116	94	98	99	112	116	115	120	129	126
22	129	132	126	115	133	130	117	124	123	128	138	165	150	156	157	176	190	161	150	182	176	211	293	297
23	288	299	305	295	303	299	292	291	282	295	273	264	256	277	284	282	271	255	255	254	251	231	202	192
24	168	165	157	176	176	165	164	166	167	161	162	160	153	151	136	137	145	137	131	133	140	123	105	108
25	121	119	138	126	134	168	161	220	232	216	240	240	237	156	128	88	101	105	127	122	110	113	108	112
26	111	116	116	122	116	115	112	114	117	119	128	135	135	164	179	259	246	236	249	235	226	194	188	187
27	188	192	193	166	159	161	134	154	125	108	115	107	103	105	108	111	106	105	107	111	121	121	124	129
28	115	114	128	130	158	160	174	211	244	248	264	257	226	202	231	248	239	227	211	213	218	217	215	230
29	254	266	251	259	254	268	245	235	179	131	143	115	124	114	125	117	120	127	95	122	102	109	111	115
30	110	113	103	107	108	111	109	102	107	105	102	107	107	107	107	98	102	106	105	109	113	112	111	136
31	128	118	128	149	156	144	186	175	151	229	206	179	266	187	237	120	188	299	272	236	254	244	268	270

TABLE 5

**Average Wind Direction (degrees from North)
 EPA Station ID 00010348-C-2
 Clean Harbors Canada, Inc.
 Monthly Ambient Air Monitoring Report
 December 2023**

Ryley Wind Direction Data (degrees, blowing from) - Month of December 2023																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
2	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
3	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
4	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
5	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
6	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
7	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
8	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
9	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
10	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
11	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
12	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
13	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
14	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
15	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
16	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
17	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
18	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
19	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
20	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
21	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
22	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
23	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
24	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
25	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
26	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
27	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
28	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
29	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
30	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										
31	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)										

Notes:
 - (X) - Equipment Malfunction

TABLE 6

**Most Frequent Wind Direction (degrees from North)
EPA Station ID 00010348-C-3
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023**

Ryley Wind Direction Data (degrees, blowing from) - Month of December 2023																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	185	176	146	112	114	112	106	111	118	113	116	116	126	124	128	126	141	118	99	134	230	215	178	213
2	213	138	156	198	195	144	150	131	129	128	116	112	111	126	118	113	87	119	147	201	237	258	266	268
3	265	266	254	249	252	231	228	223	222	220	219	211	184	173	145	132	120	118	119	138	226	253	263	270
4	259	237	234	229	225	223	224	220	219	223	224	220	220	224	224	210	211	176	193	133	78	91	107	110
5	101	115	115	124	124	127	185	127	126	124	143	175	221	225	240	278	270	268	260	231	229	239	227	233
6	203	223	225	228	258	236	244	249	213	110	132	225	232	94	116	136	142	127	129	115	192	174	202	241
7	131	102	234	327	327	313	322	255	341	343	338	317	308	282	273	284	278	257	259	262	251	257	257	266
8	256	259	259	254	253	251	251	250	258	261	277	258	273	275	264	252	237	255	253	246	253	247	253	254
9	258	245	247	239	233	231	227	230	232	234	224	226	228	215	172	119	117	115	117	117	116	114	116	120
10	123	105	129	176	150	206	209	197	220	215	209	220	221	224	228	240	256	255	268	258	242	251	277	291
11	312	301	263	282	277	283	289	291	296	291	276	253	256	220	165	179	162	154	149	117	121	143	145	164
12	208	219	225	241	245	223	229	230	223	220	220	218	217	216	217	214	206	194	187	188	182	183	158	158
13	162	183	196	175	195	165	144	170	175	143	132	127	140	170	142	185	188	189	212	167	196	214	232	244
14	304	326	319	297	301	285	247	257	295	294	289	260	253	231	223	213	190	212	201	178	202	227	114	123
15	198	175	127	164	195	180	181	161	129	144	137	126	127	143	149	142	143	150	146	150	152	156	161	155
16	156	142	202	286	298	278	280	280	283	287	289	292	272	261	254	214	226	223	219	217	225	227	251	289
17	294	297	297	290	282	281	274	238	224	233	225	223	216	195	167	166	153	150	171	141	129	125	123	140
18	205	219	222	221	219	223	224	221	229	224	225	238	251	264	257	224	172	127	24	65	286	272	255	297
19	213	252	200	41	35	24	72	64	76	71	78	88	94	90	86	93	96	98	96	104	105	110	110	107
20	107	108	107	112	113	115	113	112	123	125	119	135	167	213	149	117	117	158	137	153	169	155	241	249
21	263	282	289	279	273	256	250	186	161	146	147	143	143	144	136	125	127	124	125	127	127	132	137	140
22	139	145	128	132	149	128	118	133	136	143	129	188	138	139	144	203	220	201	155	203	216	245	296	296
23	290	289	293	291	287	286	283	284	278	282	277	270	265	280	281	277	275	263	262	265	254	239	224	227
24	224	222	221	219	218	217	217	216	212	190	200	184	181	177	158	146	166	138	143	156	158	136	117	116
25	137	134	147	135	150	222	199	235	239	240	243	231	237	179	125	102	108	109	148	124	116	112	113	111
26	118	124	124	132	126	126	121	125	127	130	144	152	147	178	189	265	250	245	254	235	232	209	219	216
27	218	224	228	196	162	187	135	174	134	119	122	125	118	117	121	117	118	120	121	123	126	129	130	136
28	120	126	127	136	165	179	217	234	253	257	270	234	227	222	237	250	249	236	224	226	229	237	230	239
29	249	251	240	250	248	242	208	218	134	107	138	115	129	129	135	120	132	144	98	135	104	100	113	116
30	118	128	116	117	117	120	117	115	118	117	115	120	119	121	121	118	118	121	119	121	124	122	126	149
31	133	128	133	147	147	146	216	188	155	200	202	177	278	176	178	166	173	286	256	241	245	238	273	275

TABLE 7

Wind Frequency Distribution
EPA Station ID 00010348-C-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Frequency Distribution Report: Ryley, Alberta - December 2023										
Direction	Angle	Wind Speed (m/s) and Number of Occurrences (minutes)							%	Total Occurrences by Direction
		< 0.5	0.5 to < 2.1	2.1 to < 3.6	3.6 to < 5.7	5.7 to < 8.8	8.8 to < 11.1	>= 11.1		
North	> 337.5 - 22.5	67	224	185	137	260	1	1	2.0%	875
Northeast	> 22.5 - 67.5	88	346	282	350	605	28	1	3.8%	1700
East	> 67.5 - 112.5	105	1016	2382	3052	1098	34	1	17.2%	7688
Southeast	> 112.5 - 157.5	97	1757	3341	3188	829	4	0	20.6%	9216
South	> 157.5 - 202.5	112	923	2756	4346	1910	7	0	22.5%	10054
Southwest	> 202.5 - 247.5	88	808	1504	2039	719	1	0	11.6%	5159
West	> 247.5 - 292.5	68	1104	2497	2643	682	88	5	15.9%	7087
Northwest	> 292.5 - 337.5	52	453	540	766	719	251	80	6.4%	2861
Missing/Invalid Minutes									0.000%	0
Total Occurrences by Speed		677	6631	13487	16521	6822	414	88		44640
Occurrences by %		1.5%	14.9%	30.2%	37.0%	15.3%	0.9%	0.2%	100.000%	

TABLE 8

**Wind Frequency Distribution
 EPA Station ID 00010348-C-2
 Clean Harbors Canada, Inc.
 Monthly Ambient Air Monitoring Report
 December 2023**

Frequency Distribution Report: Ryley, Alberta - December 2023										
Direction	Angle	Wind Speed (m/s) and Number of Occurrences (minutes)							%	Total Occurrences by Direction
		< 0.5	0.5 to < 2.1	2.1 to < 3.6	3.6 to < 5.7	5.7 to < 8.8	8.8 to < 11.1	>= 11.1		
North	> 337.5 - 22.5	0	0	0	0	0	0	0	0.0%	0
Northeast	> 22.5 - 67.5	0	0	0	0	0	0	0	0.0%	0
East	> 67.5 - 112.5	0	0	0	0	0	0	0	0.0%	0
Southeast	> 112.5 - 157.5	0	0	0	0	0	0	0	0.0%	0
South	> 157.5 - 202.5	0	0	0	0	0	0	0	0.0%	0
Southwest	> 202.5 - 247.5	0	0	0	0	0	0	0	0.0%	0
West	> 247.5 - 292.5	0	0	0	0	0	0	0	0.0%	0
Northwest	> 292.5 - 337.5	0	0	0	0	0	0	0	0.0%	0
Missing/Invalid Minutes									100%	44640
Total Occurrences by Speed		0	0	0	0	0	0	0		44640
Occurrences by %		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.00%	

TABLE 9

Wind Frequency Distribution
EPA Station ID 00010348-C-3
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Frequency Distribution Report: Ryley, Alberta - December 2023										
Direction	Angle	Wind Speed (m/s) and Number of Occurrences (minutes)							%	Total Occurrences by Direction
		< 0.5	0.5 to < 2.1	2.1 to < 3.6	3.6 to < 5.7	5.7 to < 8.8	8.8 to < 11.1	>= 11.1		
North	> 337.5 - 22.5	271	605	104	6	0	0	0	2.2%	986
Northeast	> 22.5 - 67.5	181	243	36	0	0	0	0	1.0%	460
East	> 67.5 - 112.5	247	1588	987	743	234	1	0	8.5%	3800
Southeast	> 112.5 - 157.5	361	3324	5024	3874	566	13	0	29.5%	13162
South	> 157.5 - 202.5	395	2048	1851	925	47	0	0	11.8%	5266
Southwest	> 202.5 - 247.5	1928	7368	1214	187	13	0	0	24.0%	10710
West	> 247.5 - 292.5	760	4858	1508	830	265	11	0	18.4%	8232
Northwest	> 292.5 - 337.5	528	807	328	272	79	8	2	4.5%	2024
Missing/Invalid Minutes									0.0%	0
Total Occurrences by Speed		4671	20841	11052	6837	1204	33	2		44640
Occurrences by %		10.5%	46.7%	24.8%	15.3%	2.7%	0.1%	0.0%	100.00%	

TABLE 10

Total Suspended Particulate (TSP) Matter Results
EPA Station ID 00010348-I-2
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Filter ID	HV-23-02-17
Test ID	Facility Test # 109
Sample Start Date/Time	23/12/01 14:00:00
Sample End Date/Time	24/01/01 13:00:00
Sampling Time (hours)	10.33
Flow Rate (m³/min)	1.252
Volume (m³)	776.24
TSP Mass (mg)	147
TSP Concentration (ug/m³)	189.374
Sampler Name	TE-5170V / P8580 TSP VFC

TABLE 11

Total Suspended Particulate (TSP) Matter Results
EPA Station ID 00010348-I-3
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Filter ID	HV-23-02-18
Test ID	School Test # 109
Sample Start Date/Time	23/12/01 14:00:00
Sample End Date/Time	24/01/01 13:00:00
Sampling Time (hours)	9.38
Flow Rate (m³/min)	1.251
Volume (m³)	704.313
TSP Mass (mg)	114
TSP Concentration (ug/m³)	161.860
Sampler Name	TE-5170V / P8581 TSP VFC

TABLE 12

Total Suspended Particulate (TSP) Matter Results
EPA Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Filter ID	HVF-23-10-03	HVF-23-10-02	HVF-23-10-06	HVF-23-10-04	HVF-23-10-09
Test ID	875	876	877	878	879
Sample Start Date/Time	23/12/02 00:00:00	23/12/08 00:00:00	23/12/14 00:00:00	23/12/20 00:00:00	23/12/26 00:00:00
Sample End Date/Time	23/12/03 00:00:00	23/12/09 00:00:00	23/12/15 00:00:00	23/12/21 00:00:00	23/12/27 00:00:00
Sampling Time (hours)	23.78	24.09	24.31	24.56	24.37
Flow Rate (m³/min)	1.277	1.277	1.277	1.251	1.251
Volume (m³)	1822.02	1845.78	1862.63	1843.47	1829.21
TSP Mass (mg)	101	32.1	31	23.5	24.1
TSP Concentration (ug/m³)	55.433	17.391	16.643	12.748	13.175
Sampler Name	TE-5170V / P11162 TSP VFC				

TABLE 13

Particulate Matter PM₁₀ Results
EPA Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Filter ID	AT85238	AT85237	AT76602	AT85099	AT83614
Test ID	875	876	877	878	879
Sample Start Date/Time	23/12/02 00:00:00	23/12/08 00:00:00	23/12/14 00:00:00	23/12/20 00:00:00	23/12/26 00:00:00
Sample End Date/Time	23/12/03 00:00:00	23/12/09 00:00:00	23/12/15 00:00:00	23/12/21 00:00:00	23/12/27 00:00:00
Sampling Time (hours)	24	24	24	24	24
Flow Rate (l/min)	16.7	16.7	16.7	16.7	16.7
Volume (m³)	24.4	24.9	24.1	24.4	24.2
PM₁₀ Mass (mg)	0.728	0.184	0.102	0.155	0.070
PM₁₀ Concentration (ug/m³)	29.836	7.390	4.232	6.352	2.893
Sampler Name	2000 FRM-AE / 200FB209860905				

TABLE 14

VOC and TNMOC Analytical Results
EPA Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Parameter	Units	Date	2-Dec-23	8-Dec-23	14-Dec-23	20-Dec-23	26-Dec-23
		Sample ID	875	876	877	878	879
		AAAQO ⁽¹⁾					
Total Non-Methane Organic Carbon	ppmv	-	< 0.08	< 0.08	< 0.08	< 0.07	< 0.08
1,2,3-Trimethylbenzene	ppbv	-	< 0.08	< 0.08	< 0.08	< 0.07	< 0.08
1,2,4-Trimethylbenzene	ppbv	-	< 0.05	< 0.05	< 0.05	0.07	0.08
1,3,5-Trimethylbenzene	ppbv	-	< 0.05	< 0.05	< 0.05	0.06	0.07
1-Butene/Isobutylene	ppbv	-	< 0.10	< 0.10	< 0.09	< 0.09	< 0.10
1-Hexene/2-Methyl-1-pentene	ppbv	-	< 0.12	< 0.11	< 0.11	< 0.10	< 0.12
1-Pentene	ppbv	-	< 0.05	< 0.05	< 0.05	< 0.04	< 0.05
2,2,4-Trimethylpentane	ppbv	-	< 0.03	< 0.03	0.03	< 0.03	0.05
2,2-Dimethylbutane	ppbv	-	< 0.03	< 0.03	< 0.03	0.03	0.04
2,3,4-Trimethylpentane	ppbv	-	< 0.03	< 0.03	< 0.03	< 0.03	0.08
2,3-Dimethylbutane	ppbv	-	< 0.15	< 0.14	< 0.14	< 0.13	< 0.15
2,3-Dimethylpentane	ppbv	-	< 0.03	< 0.03	0.08	0.05	0.08
2,4-Dimethylpentane	ppbv	-	< 0.05	< 0.05	< 0.05	0.05	0.06
2-Methylheptane	ppbv	-	< 0.03	< 0.03	0.11	< 0.03	< 0.03
2-Methylhexane	ppbv	-	0.06	< 0.05	0.21	< 0.04	0.16
2-Methylpentane	ppbv	-	0.44	0.19	0.48	0.22	0.30
3-Methylheptane	ppbv	-	< 0.05	< 0.05	< 0.05	0.08	0.10
3-Methylhexane	ppbv	-	0.07	0.05	0.27	0.06	0.21
3-Methylpentane	ppbv	-	0.16	0.13	0.21	0.09	0.21
Benzene	ppbv	-	0.19	0.12	0.26	< 0.04	< 0.05
cis-2-Butene	ppbv	-	< 0.05	< 0.05	< 0.05	< 0.04	< 0.05
cis-2-Pentene	ppbv	-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Cyclohexane	ppbv	-	0.07	< 0.06	0.17	0.12	0.15
Cyclopentane	ppbv	-	0.05	< 0.03	0.08	0.03	0.04
Ethylbenzene	ppbv	-	0.38	< 0.05	0.48	< 0.04	< 0.05
Isobutane	ppbv	-	2.01	1.79	0.86	0.60	0.79
Isopentane	ppbv	-	1.20	1.03	0.97	< 0.06	< 0.07
Isoprene	ppbv	-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Isopropylbenzene	ppbv	-	< 0.07	< 0.06	< 0.06	< 0.06	< 0.07
m,p-Xylene	ppbv	161	0.22	< 0.06	1.55	< 0.06	0.07
m-Diethylbenzene	ppbv	-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
m-Ethyltoluene	ppbv	-	< 0.05	< 0.05	0.09	< 0.04	< 0.05
Methylcyclohexane	ppbv	-	0.12	0.05	0.32	0.05	0.16
Methylcyclopentane	ppbv	-	0.12	0.15	0.22	0.09	0.28
n-Butane	ppbv	-	3.89	3.67	1.92	1.12	1.42
n-Decane	ppbv	-	< 0.10	< 0.10	< 0.09	< 0.09	< 0.10
n-Dodecane	ppbv	-	< 0.5	< 0.5	< 0.5	< 0.4	< 0.5
n-Heptane	ppbv	-	0.09	< 0.06	0.41	0.20	0.43
n-Hexane	ppbv	1990	0.26	0.44	0.53	0.22	0.82
n-Nonane	ppbv	-	< 0.07	< 0.06	0.12	< 0.06	< 0.07
n-Octane	ppbv	-	0.04	< 0.03	0.20	0.09	0.11
n-Pentane	ppbv	-	0.86	0.69	0.84	0.35	0.45
n-Propylbenzene	ppbv	-	< 0.10	< 0.10	< 0.09	< 0.09	< 0.10
n-Undecane	ppbv	-	< 0.8	< 0.8	< 0.8	< 0.7	< 0.8
o-Ethyltoluene	ppbv	-	< 0.03	< 0.03	0.05	< 0.03	< 0.03
o-Xylene	ppbv	161	< 0.05	< 0.05	0.37	< 0.04	< 0.05
p-Diethylbenzene	ppbv	-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
p-Ethyltoluene	ppbv	-	< 0.07	< 0.06	0.07	< 0.06	< 0.07
Styrene	ppbv	-	0.24	< 0.06	0.06	0.13	0.15
Toluene	ppbv	106	0.37	0.28	5.09	0.06	0.25
trans-2-Butene	ppbv	-	< 0.05	< 0.05	< 0.05	< 0.04	< 0.05
trans-2-Pentene	ppbv	-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Total VOCs ⁽²⁾	ppbv	-	13.780	11.880	18.570	6.330	9.350

Notes:

(1) Alberta Ambient Air Quality Objectives for a 24 hour averaging period.

(2) Total VOCs are calculated under the assumption that values under the detection limit are equal to the detection limit, as per the AMD.

TABLE 15

TSP Metals Analytical Results
EPA Station ID 00010348-I-2
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Parameter	Date		AAAQO ⁽²⁾ (ug/m ³)
	Sample ID	1-Dec-23 HV-23-02-17	
	Lab Results ⁽¹⁾	(ug/m ³) ⁽²⁾	
Antimony	210 ng/Filter	5.20E-04	-
Arsenic	696 ng/Filter	1.72E-03	0.10
Barium	< 300 ng/Filter	7.43E-04	-
Beryllium	< 0.60 ng/Filter	1.49E-06	-
Boron	3670000 ng/Filter	9.09E+00	-
Cadmium	710 ng/Filter	1.76E-03	-
Chromium	10900 ng/Filter	2.70E-02	1.0
Cobalt	489 ng/Filter	1.21E-03	-
Copper	96400 ng/Filter	2.39E-01	-
Iron	1470000 ng/Filter	3.64E+00	-
Lead	27900 ng/Filter	6.91E-02	1.5
Manganese	148000 ng/Filter	3.67E-01	2
Mercury	< 0.70 ng/Filter	1.73E-06	-
Nickel	4200 ng/Filter	1.04E-02	6
Selenium	524 ng/Filter	1.30E-03	-
Silver	181 ng/Filter	4.48E-04	-
Thallium	25.9 ng/Filter	6.42E-05	-
Tin	349 ng/Filter	8.65E-04	-
Uranium	53.7 ng/Filter	1.33E-04	-
Vanadium	2600 ng/Filter	6.44E-03	-
Zinc	< 1000 ng/Filter	2.48E-03	-
Zirconium	759 ng/Filter	1.88E-03	-

Sampling Time (hours)	10.33
Flow Rate (m³/min)	1.252
Volume Sampled (m³)	776.24

Notes:

(1) These results are from a 10.33 hour averaging period that took place on December 1, 2023 to January 1, 2024

(2) Measured data have been converted from the measured 10.33 hour averaging period to a 1 hour averaging period based on Alberta's Air Quality Model Guideline Section 7.1.2.

TABLE 16

TSP Metals Analytical Results
EPA Station ID 00010348-I-3
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Parameter	Date	1-Dec-23		AAAQO ⁽²⁾ (ug/m ³)
	Sample ID	HV-23-02-18		
	Lab Results ⁽¹⁾		(ug/m ³) ⁽²⁾	
Antimony	49.1	ng/Filter	1.30E-04	-
Arsenic	327	ng/Filter	8.69E-04	0.10
Barium	634000	ng/Filter	1.06E-02	-
Beryllium	< 0.60	ng/Filter	1.59E-06	-
Boron	2290000	ng/Filter	6.09E+00	-
Cadmium	213	ng/Filter	5.66E-04	-
Chromium	1740	ng/Filter	4.62E-03	1.0
Cobalt	169	ng/Filter	4.49E-04	-
Copper	91600	ng/Filter	2.43E-01	-
Iron	378000	ng/Filter	1.00E+00	-
Lead	2310	ng/Filter	6.14E-03	1.5
Manganese	20900	ng/Filter	5.55E-02	2
Mercury	< 0.70	ng/Filter	1.86E-06	-
Nickel	1350	ng/Filter	3.59E-03	6
Selenium	564	ng/Filter	1.50E-03	-
Silver	62.8	ng/Filter	1.67E-04	-
Thallium	7.08	ng/Filter	1.88E-05	-
Tin	2160	ng/Filter	5.74E-03	-
Uranium	5.63	ng/Filter	1.50E-05	-
Vanadium	985	ng/Filter	2.62E-03	-
Zinc	< 1000	ng/Filter	2.66E-03	-
Zirconium	1670	ng/Filter	4.44E-03	-
Sampling Time (hours)	9.38			
Flow Rate (m³/min)	1.251			
Volume Sampled (m³)	704.31			

Notes:

(1) These results are from a 9.38 hour averaging period that took place on December 1, 2023 to January 1, 2024

(2) Measured data have been converted from the measured 9.38 hour averaging period to a 1 hour averaging period based on Alberta's Air Quality Model Guideline Section 7.1.2.

TABLE 17

TSP Metals Analytical Results
EPA Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Parameter	Date		2-Dec-23		AAAQO ⁽³⁾ (ug/m ³)
	Sample ID	Lab Results ⁽¹⁾	875	(ug/m ³) ⁽³⁾	
Antimony	298	ng/Filter	3.97E-04	-	
Arsenic	1250	ng/Filter	1.67E-03	0.10	
Barium	< 300	ng/Filter	4.00E-04	-	
Beryllium	72.4	ng/Filter	9.65E-05	-	
Boron	5250000	ng/Filter	7.00E+00	-	
Cadmium	196	ng/Filter	2.61E-04	-	
Chromium	5360	ng/Filter	7.14E-03	1.0	
Cobalt	1030	ng/Filter	1.37E-03	-	
Copper	826000	ng/Filter	1.10E+00	-	
Iron	3210000	ng/Filter	4.28E+00	-	
Lead	10400	ng/Filter	1.39E-02	1.5	
Manganese	110000	ng/Filter	1.47E-01	2	
Mercury	3.98	ng/Filter	5.30E-06	-	
Nickel	4100	ng/Filter	5.46E-03	6	
Selenium	673	ng/Filter	8.97E-04	-	
Silver	422	ng/Filter	5.62E-04	-	
Thallium	21.4	ng/Filter	2.85E-05	-	
Tin	332	ng/Filter	4.43E-04	-	
Uranium	179	ng/Filter	2.39E-04	-	
Vanadium	5420	ng/Filter	7.22E-03	-	
Zinc	< 1000	ng/Filter	1.33E-03	-	
Sampling Time (hours)	23.78				
Flow Rate (l/min)	1.277				
Volume Sampled (m³)	1822.02				

Notes:

(1) These results are from an approximately 24 hour averaging period that took place on December 2, 2023.

(2) Measured data have been converted from the measured approximately 24 hour averaging period to a 1 hour averaging period based on Alberta's Air Quality Model Guideline Section 7.1.2.

TABLE 18

PM10 Metals Analytical Results
EPA Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
December 2023

Parameter	Date		2-Dec-23	
	Sample ID	875	Lab Results ⁽¹⁾	AAAQO ⁽²⁾ (ug/m ³)
Antimony	12.0	ng/Filter	1.20E-03	-
Arsenic	17.2	ng/Filter	1.72E-03	0.10
Barium	413	ng/Filter	4.12E-02	-
Beryllium	0.58	ng/Filter	5.79E-05	-
Boron	80.2	ng/Filter	8.00E-03	-
Cadmium	2.04	ng/Filter	2.04E-04	-
Chromium	38	ng/Filter	3.79E-03	1.0
Cobalt	7.26	ng/Filter	7.24E-04	-
Copper	787	ng/Filter	7.85E-02	-
Iron	27000	ng/Filter	2.69E+00	-
Lead	47.1	ng/Filter	4.70E-03	1.5
Manganese	830	ng/Filter	8.28E-02	2
Mercury	< 0.07	ng/Filter	6.99E-06	-
Nickel	23.5	ng/Filter	2.34E-03	6
Selenium	7.6	ng/Filter	7.58E-04	-
Silver	0.71	ng/Filter	7.08E-05	-
Thallium	0.35	ng/Filter	3.49E-05	-
Tin	5.75	ng/Filter	5.74E-04	-
Uranium	1.22	ng/Filter	1.22E-04	-
Vanadium	45.0	ng/Filter	4.49E-03	-
Zinc	586	ng/Filter	5.85E-02	-
Sampling Time (hours)	24			
Flow Rate (l/min)	16.7			
Volume Sampled (m³)	24.4			

Notes:

(1) These results are from an approximately 24 hour averaging period that took place on December 2, 2023.

(2) Measured data have been converted from the measured approximately 24 hour averaging period to a 1 hour averaging period based on Alberta's Air Quality Model Guideline Section 7.1.2.

Appendix A

Meteorological Station Calibration

Report

R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE

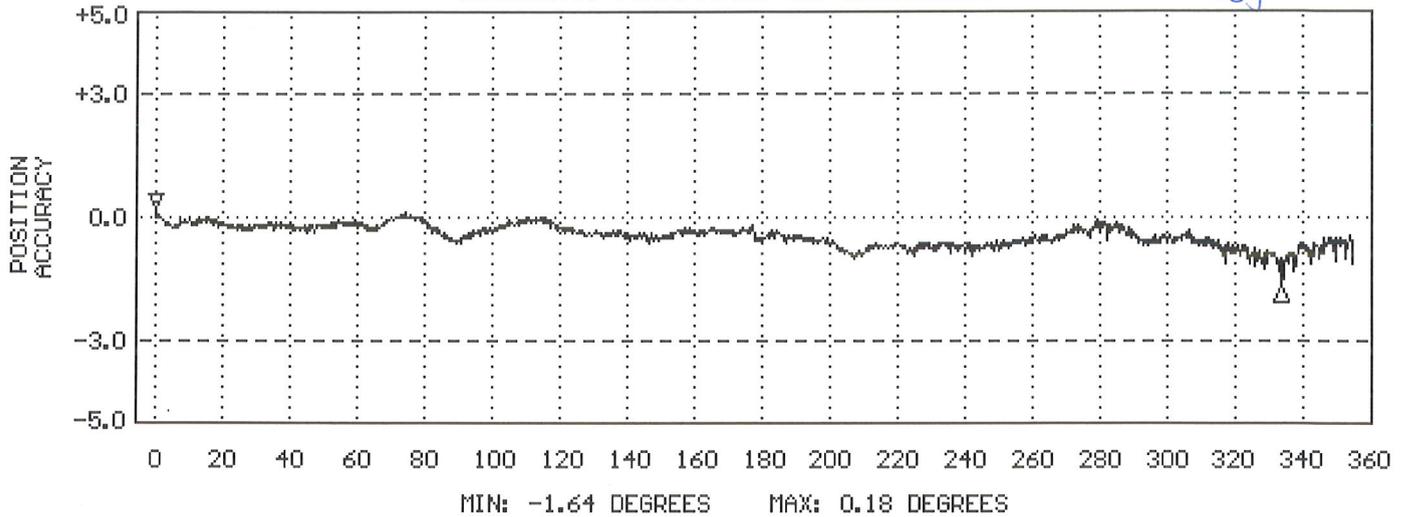
SENSOR: 05305-10A WIND MONITOR-AQ
SENSOR SERIAL NUMBER: WM149768
BEARINGS: SHIELDED/OIL LUBE
DATE: AUG 3 2016

WIND SPEED THRESHOLD TEST: PASS
LOW WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
HIGH WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
VANE TORQUE TEST: PASS
SPECIAL NOTES:
SPECIAL NOTES:

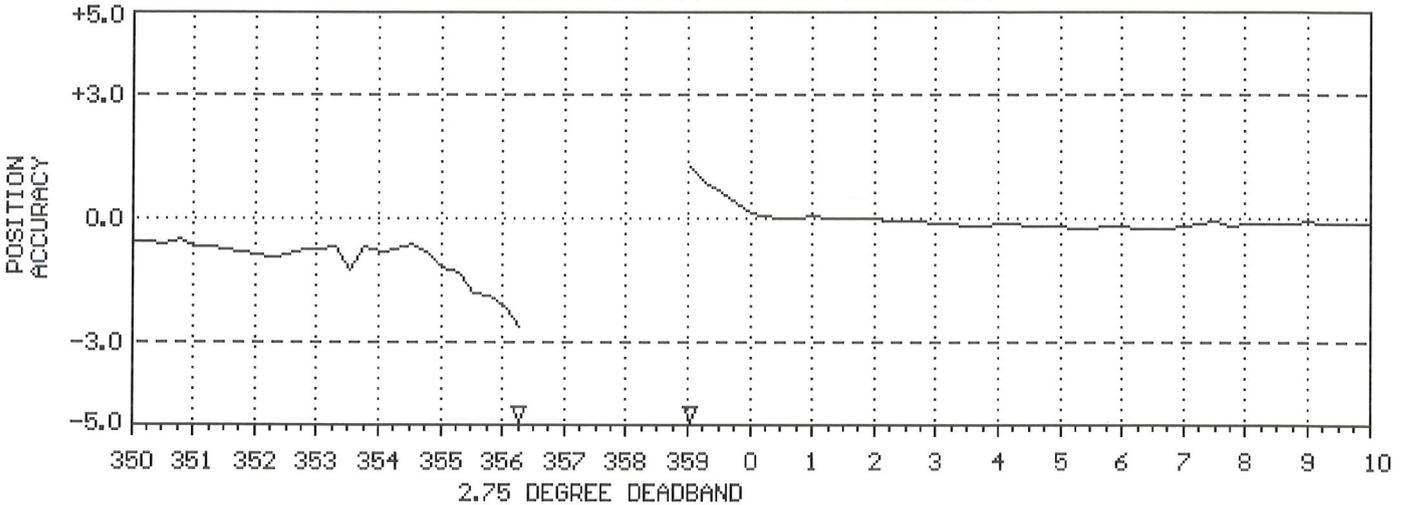
[Signature]
Insp. By

Installed Nov. 8/16
By S.Y. dy.

AZIMUTH POSITION vs ACCURACY



AZIMUTH POSITION vs ACCURACY



NOTE: Azimuth Position vs Accuracy graphs are accurate to within 0.5 degrees. The accuracy shown in the potentiometer deadband region between 355 and 0 degrees is the result of no resistance change while position changes. The gap represents the actual deadband (open circuit).



GHD Wind Calibration Form

Site and Instrument Information					
<u>Site</u>			<u>Wind Monitor</u>		
Location:	Facility		Make:	RM Young	
Calibration Date:	Jun 30, 2023		Model:	05305	
Tech.:	P. Shariaty & S. Davey		Serial #:	149768	
Instrument:	Continuous Wind Monitor		Calibration due:	Annually	
Time:	1:05 PM - 1:20 PM		Temperature:	25°C	
Pre-Calibration Inspection			Y/N		
Is the wind direction < +/- 10° from compass observation?			N		
Is siting aligned?			Y		
Does the propeller rotate 360° with no friction?			Y		
Does the vane rotate 360° with no friction?			Y		
Calibration Information					
Direction (degrees °)			Anemometer Speed (m/s)		
Test Angle (°)	Recorded Angle (°)	Within +/- 5°? (Y/N)	Test Speed (m/s)	Recorded Speed (m/s)	Within +/- 3 (m/s)? (Y/N)
0	0	Y	26.1	26.0	Y
30	29	Y	24.6	24.5	Y
60	59	Y	23.0	22.9	Y
180	178	Y	20.5	20.4	Y
			18.9	18.9	Y
			41.0	40.8	Y
Comments			Conversion Factors		
Wind monitor (SN:149768) was removed from tower, inspected and the calibration was checked on June 30, 2023. Mechanical bearings and shaft alignment were inspected. Bearings were cleaned of any dust buildup. Alignment was in good condition. Wind direction calibration adjustment was required based on the pre-calibration inspection. Other than cleaning and direction calibration, no additional maintenance was required. It is recommended that the instrument be cleaned biannually and bearings checked and replaced (if required) at the next calibration interval. After calibration check, wind monitor was re-installed and sited back to original position.			m/s		RPM
			26.112		5100.0
			24.576		4800.0
			23.040		4500.0
			20.480		4000.0
			18.944		3700.0
40.960		8000.0			
Calibration Adjustment Required?: Yes					



GHD Wind Calibration Form

Site and Instrument Information						
<u>Site</u>			<u>Wind Monitor</u>			
Location:	Ryley School		Make:	RM Young		
Calibration Date:	Jun 30, 2023		Model:	05305		
Tech.:	P. Shariaty & S. Davey		Serial #:	183487		
Instrument:	Continuous Wind Monitor		Calibration due:	Annually		
Time:	10:00 AM - 11:20 AM		Temperature:	22°C		
Pre-Calibration Inspection				Y/N		
Is the wind direction < +/- 10° from compass observation?				N		
Is siting aligned?				Y		
Does the propeller rotate 360° with no friction?				Y		
Does the vane rotate 360° with no friction?				Y		
Calibration Information						
Direction (degrees °)			Anemometer Speed (m/s)			
Test Angle (°)	Recorded Angle (°)	Within +/- 5°? (Y/N)	Test Speed (m/s)	Recorded Speed (m/s)	Within +/- 3 (m/s)? (Y/N)	
0	1	Y	26.112	26.0	Y	
30	29	Y	24.576	24.5	Y	
330	332	Y	23.040	22.9	Y	
60	57	Y	20.480	20.4	Y	
90	86	Y	18.944	18.9	Y	
0	1	Y	40.960	40.8	Y	
180	176	Y				
260	256	Y				
Comments				Conversion Factors		
Wind monitor (SN:183487) was removed from tower, inspected and the calibration was checked on June 30, 2023. Mechanical bearings and shaft alignment were inspected. Bearings were cleaned of any dust buildup. Alignment was in good condition. Wind direction calibration adjustment was required based on the pre-calibration inspection. Other than cleaning and direction calibration, no additional maintenance was required. It is recommended that the instrument be cleaned biannually and bearings checked and replaced (if required) at the next calibration interval. After the calibration check, the wind monitor was re-installed and sited back to the original position.				m/s	RPM	
				26.112	5100.0	
				24.576	4800.0	
				23.040	4500.0	
				20.480	4000.0	
				18.944	3700.0	
40.960	8000.0					
Calibration Adjustment Required?: Yes						

Appendix B

Sampling Field Sheets

FIELD SHEET
PM₁₀ (Partisol Monitoring Unit)
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA

A) GENERAL INFORMATION

Filter ID:	<u>AT85238</u>	
PO Number:	<u>238012</u>	
Partisol Sampler ID/Serial Number:	<u>2000 FRM-AE / 200FB209860905</u>	
Test number :	<u>Particulate Test 875</u>	
Sample Date:	<u>23/12/02</u>	<u>yy/mm/dd</u>
Shipping Date to Laboratory:	<u>23/12/05</u>	
PM10 Analysis Trigger Weight (mg):	<u>1.22</u>	weight which PM10 conc. > 50 µg/m ³

B) SAMPLING INFORMATION

SAMPLE START

Sampling Start Date:	<u>23/12/02</u>	
Sampling Start Time:	<u>00:00</u>	
Current Instrument Date:	<u>23/11/27</u>	
Current Instrument Time:	<u>14:53</u>	
Ambient Temperature °C:	<u>3.3</u>	
Barometric Pressure (mm Hg):	<u>698</u>	
Leak Check:	<u>Pass</u>	(Pass/Fail)
Clean PM10 Inlet:	<u>Yes</u>	(Yes/No)
Weather Conditions Sampling date :	<u>Mostly Sunny</u>	
Weather Conditions set up:	<u>Mostly Cloudy</u>	

SAMPLE RETRIEVAL

Sampled by	<u>T. Webb</u>	
Sampling End Date:	<u>23/12/03</u>	
Sampling End Time:	<u>00:00</u>	
Current Instrument Date:	<u>23/12/04</u>	
Current Instrument Time:	<u>11:10</u>	
Run Status:	<u>Ok</u>	(Ensure Run Status is OK)
Total Sampling Time (Hours):	<u>24</u>	
Volume Sampled (m ³):	<u>24.4</u>	
Average Flow Rate (L/min):	<u>16.7 L/min</u>	
AmbT °C :	<u>1.4</u>	
Barometric Pressure (mm Hg) :	<u>697</u>	
Sample Filter Temperature °C :	<u>1.5</u>	
Flow Rate Coefficient of Variation (%CV):	<u>0</u>	
Weather Conditions :	<u>Mostly Sunny</u>	
Leak Check:	<u>Pass</u>	(Pass/Fail)

FIELD BLANK

Was a field blank collected	<u>No</u>	(Once every quarter) (Yes/No)
Filter ID:	<u> </u>	
Filter Batch Number:	<u> </u>	
Current Instrument Date:	<u> </u>	
Current Instrument Time:	<u> </u>	

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?

No

Describe facility operations that may affect sampling event:

Comments:

FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RILEY, ALBERTA

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 875
Sample Canister Location: Riley Lift Station -Shed
Sampled by: T.Webb

Sampler Name: Test 875
Sample Date: 23/12/02 yy/mm/dd
Shipping Date to Laboratory: 23/12/03

Canister Type (ie. 1 Litre/6 Litre/Other): 6L
Canister Serial No.: 32212
Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	23/11/27	23/12/4
Ambient Temperature °C (inside shed):	13.2	15.7
Barometric Pressure (mm Hg):	698	698
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.1	(-)4
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?

No

Describe general weather conditions during sampling event:

Mostly Sunny

Describe facility operations that may affect sampling event:

None

Comments:

**CLEAN HARBORS CANADA INC
TSP (High Volume Monitoring Unit)
CLEAN HARBORS CANADA INC
RILEY, ALBERTA**

1. SAMPLING INFORMATION

Sample ID	Test #875			
Lab Filter ID	HVF-23-10-03			
Start Sampling	12	2	0	2023
	mm	dd	hr	
Stop Sampling	12 3 0 2023			
	mm	dd	hr	
Timer Initial:	1331.68			
Timer Final:	1355.46			
	23.78			
Total Sampling Time	23	hr	47	min 1427
Average Flow Rate	cfm			
Actual m3/min	1.277			
Air Volume	1822.0 cubic metres			
Net TSP Weight	g			
TSP Concentration	mg/m3			
TSP Analysis Trigger Weight	91.1	mg	weight which TSP conc. > 50 µg/m ³	

3. OBSERVATIONS

Comments:

Instrument Last Calibrated: 19-Oct-23

3. GUIDELINES

- Faceplate must be handtight.
- Flow rate must be ±10 percent of established flow rate.
- Faceplate gasket must be in good condition.
- Rotameter must be free of foreign material.
- Rotameter operation must be stable.
- Sampler motor brushes must be changed every 400 hours of operation.
- TSP analysis triggers when concentration >0.05mg/m3

Sample was collected in accordance with the above guidelines.

Sampler's Signature: _____

Comments: _____

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RILEY, ALBERTA			
<u>A) GENERAL INFORMATION</u>			
Filter ID:	AT85237		
PO Number:	238012		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 876		
Sample Date:	23/12/08	yy/mm/dd	
Shipping Date to Laboratory:	23/12/13		
PM10 Analysis Trigger Weight (mg):	1.25	weight which PM10 conc. > 50 µg/m ³	
<u>B) SAMPLING INFORMATION</u>			
SAMPLE START			
Sampling Start Date:	23/12/08		
Sampling Start Time:	00:00		
Current Instrument Date:	23/12/04		
Current Instrument Time:	11:16		
Ambient Temperature °C:	1.4		
Barometric Pressure (mm Hg):	697		
Leak Check:	Pass	(Pass/Fail)	
Clean PM10 Inlet:	Yes	(Yes/No)	
Weather Conditions Sampling date :	partly cloudy		
Weather Conditions set up:	passing clouds		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	23/12/09		
Sampling End Time:	00:00		
Current Instrument Date:	23/12/11		
Current Instrument Time:	15:46		
Run Status:	Ok	(Ensure Run Status is OK)	
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	24.9		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	-8.9		
Barometric Pressure (mm Hg) :	707		
Sample Filter Temperature °C :	-7.3		
Flow Rate Coefficient of Variation (%CV):	0.2		
Weather Conditions :	broken clouds		
Leak Check:	Pass	(Pass/Fail)	
FIELD BLANK			
Was a field blank collected	Yes	(Once every quarter)	
Filter ID:	AT85100	(Yes/No)	
Filter Batch Number:			
Current Instrument Date:	23/12/11		
Current Instrument Time:	15:55		
<u>C) OBSERVATIONS</u>			
Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?	No		
Describe facility operations that may affect sampling event:			
Comments:			

**FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA**

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 876
 Sample Canister Location: Ryley Lift Station -Shed
 Sampled by: T.Webb
 Sampler Name: Test 876
 Sample Date: 23/12/08 yy/mm/dd
 Shipping Date to Laboratory: 23/12/13
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 28956
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	23/12/04	23/12/11
Ambient Temperature °C (inside shed):	15.7	14.8
Barometric Pressure (mm Hg):	697	707
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.4	(-)4
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event? No

Describe general weather conditions during sampling event: Partly Cloudy

Describe facility operations that may affect sampling event: None

Comments: _____

CLEAN HARBORS CANADA INC
TSP (High Volume Monitoring Unit)
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA

1. SAMPLING INFORMATION

Sample ID	Test #876			
Lab Filter ID	HVF-23-10-02			
Start Sampling	12 mm	2 dd	0 hr	2023
Stop Sampling	12 mm	3 dd	0 hr	2023
Timer Initial:	1355.46			
Timer Final:	1379.55			
	24.09			
Total Sampling Time	24 hr		5 min	1445
Average Flow Rate	cfm			
Actual m3/min	1.277			
Air Volume	1845.8 cubic metres			
Net TSP Weight	g			
TSP Concentration	mg/m3			
TSP Analysis Trigger Weight	92.3 mg	weight which TSP conc. > 50 µg/m ³		

3. OBSERVATIONS

Comments:

Instrument Last Calibrated: 19-Oct-23

3. GUIDELINES

- Faceplate must be handtight.
- Flow rate must be ±10 percent of established flow rate.
- Faceplate gasket must be in good condition.
- Rotameter must be free of foreign material.
- Rotameter operation must be stable.
- Sampler motor brushes must be changed every 400 hours of operation.
- TSP analysis triggers when concentration >0.05mg/m3

Sample was collected in accordance with the above guidelines.

Sampler's Signature: _____

Comments: _____

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RILEY, ALBERTA			
A) GENERAL INFORMATION			
Filter ID:	AT76602		
PO Number:	238012		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 877		
Sample Date:	23/12/14	yy/mm/dd	
Shipping Date to Laboratory:	23/12/19		
PM10 Analysis Trigger Weight (mg):	1.21	weight which PM10 conc. > 50 µg/m ³	
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	23/12/14		
Sampling Start Time:	00:00		
Current Instrument Date:	23/12/13		
Current Instrument Time:	15:42		
Ambient Temperature °C:	4.3		
Barometric Pressure (mm Hg):	694		
Leak Check:	Pass	(Pass/Fail)	
Clean PM10 Inlet:	Yes	(Yes/No)	
Weather Conditions Sampling date :	mostly cloudy		
Weather Conditions set up:	partly sunny		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	23/12/15		
Sampling End Time:	00:00		
Current Instrument Date:	23/12/18		
Current Instrument Time:	13:45		
Run Status:	Ok	(Ensure Run Status is OK)	
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	24.1		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	7.2		
Barometric Pressure (mm Hg) :	695		
Sample Filter Temperature °C :	6.9		
Flow Rate Coefficient of Variation (%CV):	0.1		
Weather Conditions :	partly sunny		
Leak Check:	Pass	(Pass/Fail)	
FIELD BLANK			
Was a field blank collected	No	(Once every quarter)	
Filter ID:			
Filter Batch Number:			
Current Instrument Date:			
Current Instrument Time:			
C) OBSERVATIONS			
Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?	No		
Describe facility operations that may affect sampling event:			
Comments:			

**FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA**

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 877
 Sample Canister Location: Ryley Lift Station -Shed
 Sampled by: T.Webb
 Sampler Name: Test 877
 Sample Date: 23/12/14 yy/mm/dd
 Shipping Date to Laboratory: 23/12/19
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 32261
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	23/12/13	23/12/18
Ambient Temperature °C (inside shed):	15.1	14.5
Barometric Pressure (mm Hg):	694	695
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.1	(-)5
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event? No

Describe general weather conditions during sampling event: Mostly cloudy

Describe facility operations that may affect sampling event: None

Comments: _____

**CLEAN HARBORS CANADA INC
TSP (High Volume Monitoring Unit)
CLEAN HARBORS CANADA INC
RILEY, ALBERTA**

1. SAMPLING INFORMATION

Sample ID	Test #877							
Lab Filter ID	HVF-23-10-06							
Start Sampling	12 mm	14 dd	0 hr	2023				
Stop Sampling	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">12 mm</td> <td style="text-align: center;">15 dd</td> <td style="text-align: center;">0 hr</td> <td style="text-align: center;">2023</td> </tr> </table>				12 mm	15 dd	0 hr	2023
12 mm	15 dd	0 hr	2023					
Timer Initial:	1379.55							
Timer Final:	1403.86							
	24.31							
Total Sampling Time	24 hr	19 min		1459				
Average Flow Rate	cfm							
Actual m3/min	1.277							
Air Volume	1862.6 cubic metres							
Net TSP Weight	g							
TSP Concentration	mg/m3							
TSP Analysis Trigger Weight	93.1 mg	weight which TSP conc. > 50 µg/m ³						

3. OBSERVATIONS

Comments:

Instrument Last Calibrated: 19-Oct-23

3. GUIDELINES

- Faceplate must be handtight.
- Flow rate must be ±10 percent of established flow rate.
- Faceplate gasket must be in good condition.
- Rotameter must be free of foreign material.
- Rotameter operation must be stable.
- Sampler motor brushes must be changed every 400 hours of operation.
- TSP analysis triggers when concentration >0.05mg/m3

Sample was collected in accordance with the above guidelines.

Sampler's Signature: _____

Comments: _____

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RILEY, ALBERTA			
A) GENERAL INFORMATION			
Filter ID:	AT85099		
PO Number:	238012		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 878		
Sample Date:	23/12/20	yy/mm/dd	
Shipping Date to Laboratory:	24/01/02		
PM10 Analysis Trigger Weight (mg):	1.22	weight which PM10 conc. > 50 µg/m ³	
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	23/12/20		
Sampling Start Time:	00:00		
Current Instrument Date:	23/12/18		
Current Instrument Time:	13:52		
Ambient Temperature °C:	7.7		
Barometric Pressure (mm Hg):	695		
Leak Check:	Pass	(Pass/Fail)	
Clean PM10 Inlet:	Yes	(Yes/No)	
Weather Conditions Sampling date :	mostly cloudy		
Weather Conditions set up:	partly sunny		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	23/12/21		
Sampling End Time:	00:00		
Current Instrument Date:	23/12/21		
Current Instrument Time:	11:21		
Run Status:	Ok	(Ensure Run Status is OK)	
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	24.4		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	2.8		
Barometric Pressure (mm Hg) :	700		
Sample Filter Temperature °C :	3.3		
Flow Rate Coefficient of Variation (%CV):	0		
Weather Conditions :	partly cloudy		
Leak Check:	Pass	(Pass/Fail)	
FIELD BLANK			
Was a field blank collected	No	(Once every quarter)	
Filter ID:			
Filter Batch Number:			
Current Instrument Date:			
Current Instrument Time:			
C) OBSERVATIONS			
Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?	No		
Describe facility operations that may affect sampling event:			
Comments:			

**FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA**

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 878
 Sample Canister Location: Ryley Lift Station -Shed
 Sampled by: T.Webb
 Sampler Name: Test 878
 Sample Date: 23/12/20 yy/mm/dd
 Shipping Date to Laboratory: 24/01/02
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 32249
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	23/12/18	23/12/21
Ambient Temperature °C (inside shed):	14.5	15.0
Barometric Pressure (mm Hg):	695	700
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.4	(-)4
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event? No

Describe general weather conditions during sampling event: Mostly cloudy

Describe facility operations that may affect sampling event: None

Comments: _____

CLEAN HARBORS CANADA INC
TSP (High Volume Monitoring Unit)
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA

1. SAMPLING INFORMATION

Sample ID	Test #878			
Lab Filter ID	HVF-23-10-04			
Start Sampling	12 mm	20 dd	0 hr	2023
Stop Sampling	12 mm	21 dd	0 hr	2023
Timer Initial:	1403.86			
Timer Final:	1428.42			
	24.56			
Total Sampling Time	24 hr		34 min	1474
Average Flow Rate	cfm			
Actual m3/min	1.251			
Air Volume	1843.5 cubic metres			
Net TSP Weight	g			
TSP Concentration	mg/m3			
TSP Analysis Trigger Weight	92.2 mg	weight which TSP conc. > 50 µg/m ³		

3. OBSERVATIONS

Comments:

Instrument Last Calibrated: 13-Dec-23

3. GUIDELINES

- Faceplate must be handtight.
- Flow rate must be ±10 percent of established flow rate.
- Faceplate gasket must be in good condition.
- Rotameter must be free of foreign material.
- Rotameter operation must be stable.
- Sampler motor brushes must be changed every 400 hours of operation.
- TSP analysis triggers when concentration >0.05mg/m3

Sample was collected in accordance with the above guidelines.

Sampler's Signature: _____

Comments: _____

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RILEY, ALBERTA			
<u>A) GENERAL INFORMATION</u>			
Filter ID:	AT83614		
PO Number:	238012		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 879		
Sample Date:	23/12/26	yy/mm/dd	
Shipping Date to Laboratory:	24/01/02		
PM10 Analysis Trigger Weight (mg):	1.21	weight which PM10 conc. > 50 µg/m ³	
<u>B) SAMPLING INFORMATION</u>			
SAMPLE START			
Sampling Start Date:	23/12/26		
Sampling Start Time:	00:00		
Current Instrument Date:	23/12/21		
Current Instrument Time:	11:29		
Ambient Temperature °C:	3.7		
Barometric Pressure (mm Hg):	700		
Leak Check:	Pass	(Pass/Fail)	
Clean PM10 Inlet:	Yes	(Yes/No)	
Weather Conditions Sampling date :	Scattered clouds		
Weather Conditions set up:	Broken clouds		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	23/12/27		
Sampling End Time:	00:00		
Current Instrument Date:	23/12/28		
Current Instrument Time:	11:09		
Run Status:	Ok	(Ensure Run Status is OK)	
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	24.2		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	4.8		
Barometric Pressure (mm Hg) :	699		
Sample Filter Temperature °C :	4.4		
Flow Rate Coefficient of Variation (%CV):	0		
Weather Conditions :	sunny		
Leak Check:	Pass	(Pass/Fail)	
FIELD BLANK			
Was a field blank collected	No	(Once every quarter)	
Filter ID:			
Filter Batch Number:			
Current Instrument Date:			
Current Instrument Time:			
<u>C) OBSERVATIONS</u>			
Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?	No		
Describe facility operations that may affect sampling event:			
Comments:			

**FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA**

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 879
 Sample Canister Location: Ryley Lift Station -Shed
 Sampled by: T.Webb
 Sampler Name: Test 879
 Sample Date: 23/12/26 yy/mm/dd
 Shipping Date to Laboratory: 24/01/02
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 29004
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	23/12/21	23/12/28
Ambient Temperature °C (inside shed):	15.0	18.0
Barometric Pressure (mm Hg):	700	699
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.1	(-)8
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event? No

Describe general weather conditions during sampling event: scattered clouds

Describe facility operations that may affect sampling event: None

Comments: _____

CLEAN HARBORS CANADA INC
TSP (High Volume Monitoring Unit)
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA

1. SAMPLING INFORMATION

Sample ID	Test #879			
Lab Filter ID	HVF-23-10-09			
Start Sampling	12 mm	26 dd	0 hr	2023
Stop Sampling	12 mm	27 dd	0 hr	2023
Timer Initial:	1428.42			
Timer Final:	1452.79			
	24.37			
Total Sampling Time	24 hr		22 min	1462
Average Flow Rate	cfm			
Actual m3/min	1.251			
Air Volume	1829.2 cubic metres			
Net TSP Weight	g			
TSP Concentration	mg/m3			
TSP Analysis Trigger Weight	91.5 mg	weight which TSP conc. > 50 µg/m ³		

3. OBSERVATIONS

Comments:

Instrument Last Calibrated: 13-Dec-23

3. GUIDELINES

- Faceplate must be handtight.
- Flow rate must be ±10 percent of established flow rate.
- Faceplate gasket must be in good condition.
- Rotameter must be free of foreign material.
- Rotameter operation must be stable.
- Sampler motor brushes must be changed every 400 hours of operation.
- TSP analysis triggers when concentration >0.05mg/m3

Sample was collected in accordance with the above guidelines.

Sampler's Signature: _____

Comments: _____

FIELD SHEET
TSP (High Volume Monitoring Unit)
CLEAN HARBORS CANADA INC
RYLEY, ALBERTA

1. SAMPLING INFORMATION

Sample ID	Facility Test # 109			
Lab Filter ID	HV-23-02-17			
Start Sampling	12 mm	1 dd	14 hr	2023
Stop Sampling	1 mm	1 dd	13 hr	2024
Timer Initial:	3244.34			
Timer Final:	3254.64			
Total Sampling Time	10 hr	20 min	620	
Average Flow Rate	cfm			
Actual m3/min	1.252			
Air Volume	776.2 cubic metres			
Net TSP Weight	g			
TSP Concentration	mg/m3			

2. SAMPLING INFORMATION

Sample ID	School Test # 109			
Lab Filter ID	HV-23-02-18			
Start Sampling	12 mm	1 dd	14 hr	2023
Stop Sampling	1 mm	1 dd	13 hr	2024
Timer Initial:	2637.31			
Timer Final:	2647.7			
Total Sampling Time	9 hr	23 min	563	
Average Flow Rate	cfm			
Actual m3/min	1.251			
Air Volume	704.3 cubic metres			
Net TSP Weight	g			
TSP Concentration	mg/m3			

3. OBSERVATIONS

Comments:

Instrument Last Calibrated: 13-Dec-23

3. GUIDELINES

- Faceplate must be handtight.
- Flow rate must be ±10 percent of established flow rate.
- Faceplate gasket must be in good condition.
- Rotameter must be free of foreign material.
- Rotameter operation must be stable.
- Sampler motor brushes must be changed every 400 hours of operation.

Sample was collected in accordance with the above guidelines.

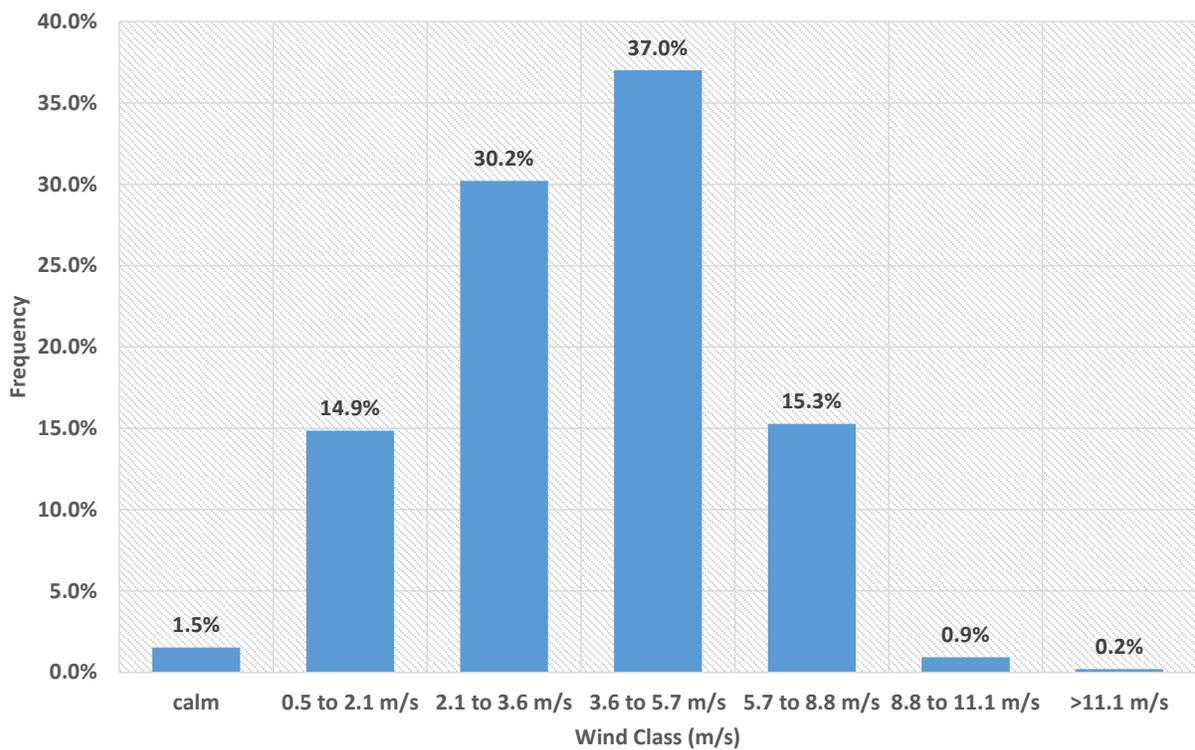
Sampler's Signature: *Alan Yuka*

Comments: _____

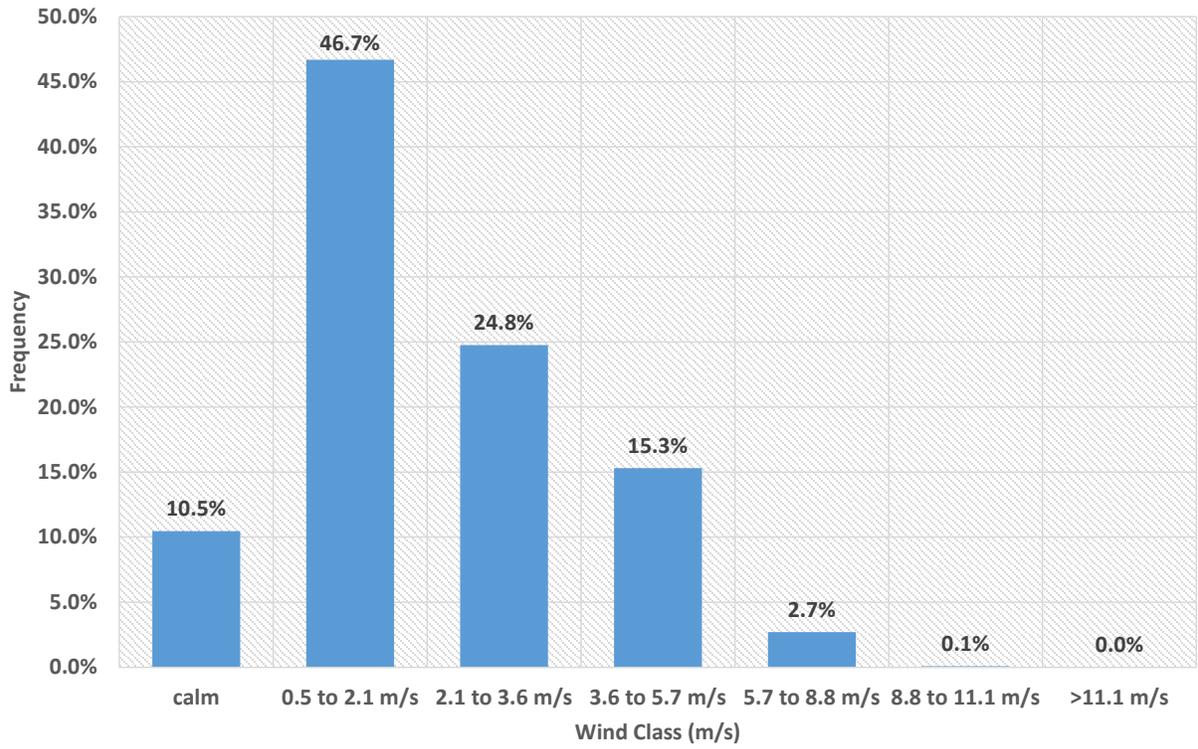
Appendix C

Wind Class Frequency Distribution Graphs and Wind Rose

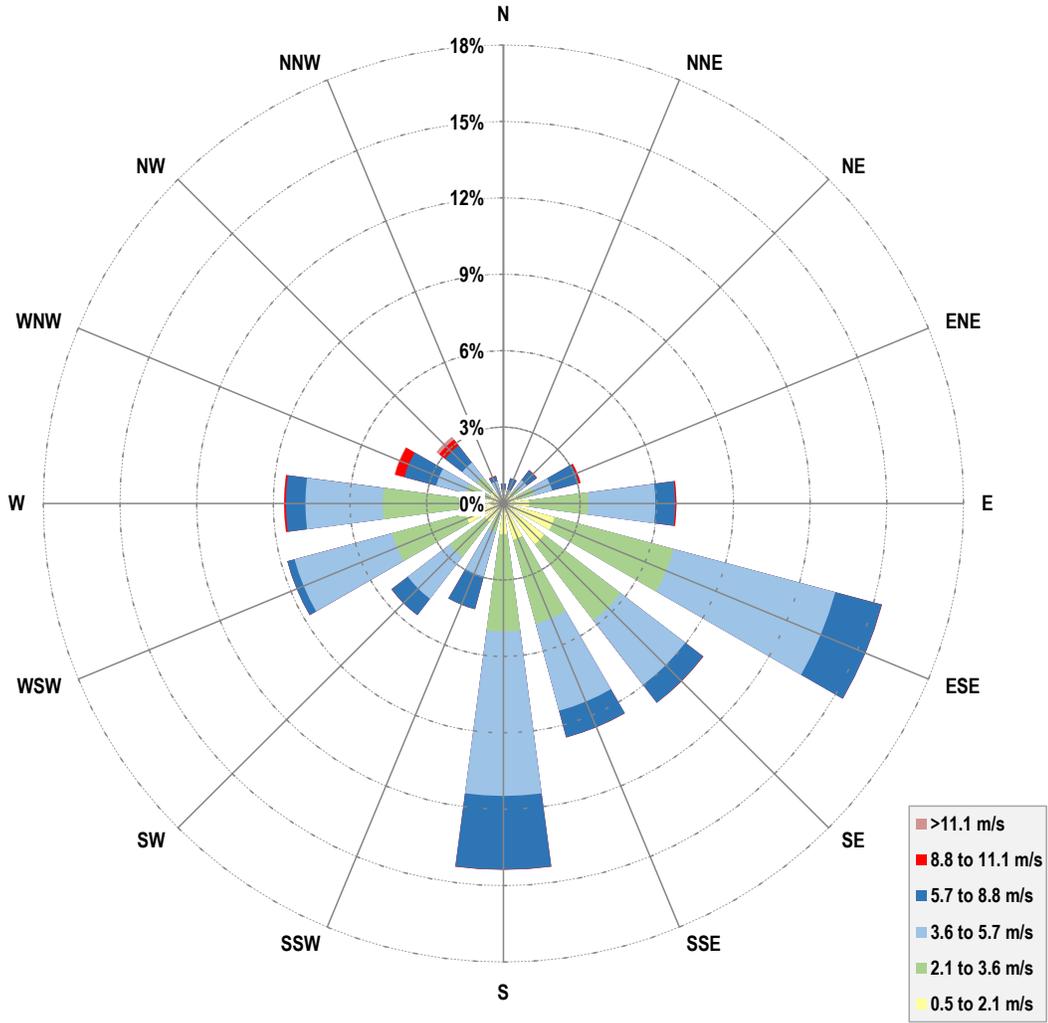
Facility Meteorological Station Wind Class Frequency Distribution



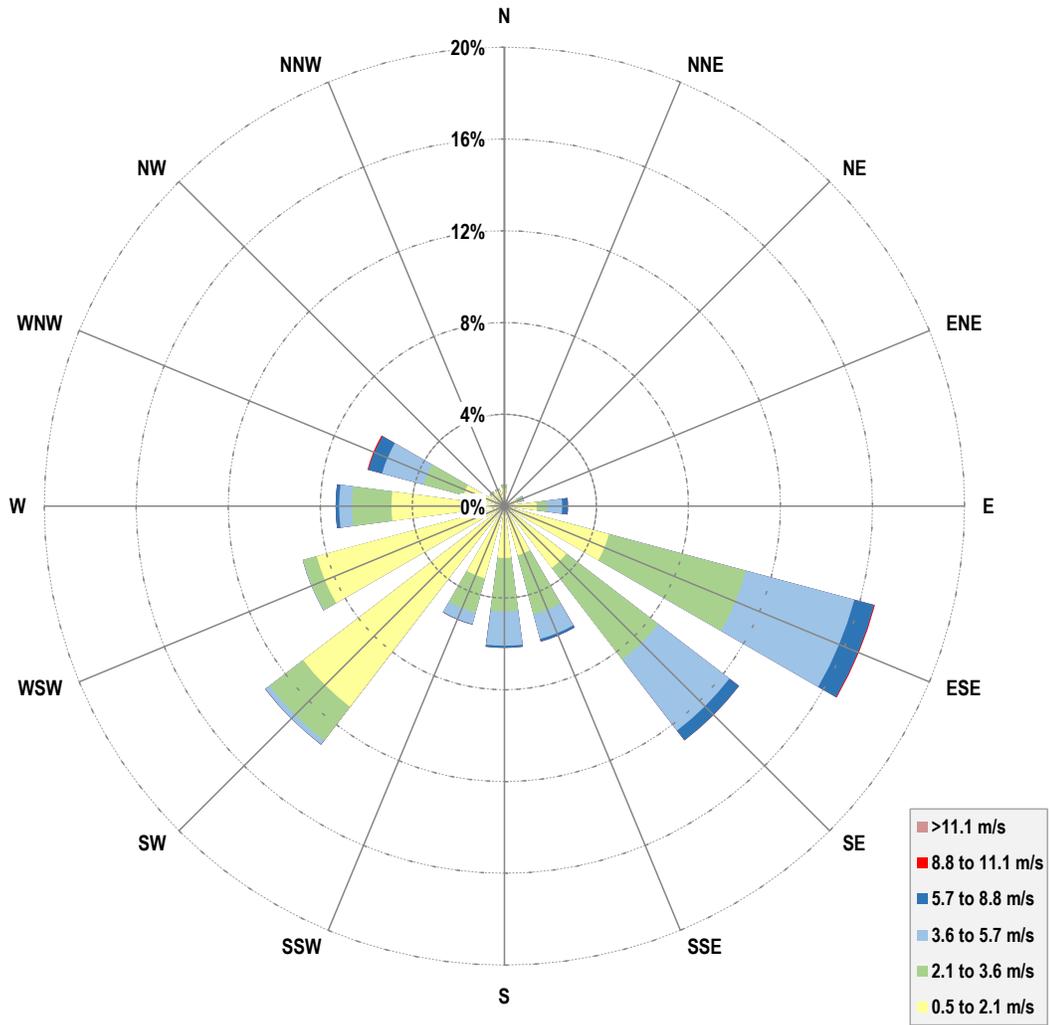
Ryley School Station Wind Class Frequency Distribution



Clean Harbors Facility Meteorological Station
(Dec 1, 2023 – Dec 31, 2023)



Clean Harbors Ryley School Station
(Dec 1, 2023 – Dec 31, 2023)



Appendix D

Chain of Custody Forms and Laboratory Analytical Reports

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB T0B 4A0</p> <p>INVOICE: Stephanie Dennis PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB T0B 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID HiVol Test # 875 - Filter # HVF-23-10-03</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: HiVol Filter</p> <p>DATE SAMPLED: 02-Dec-23 0:00 DATE RECEIVED: 06-Dec-23</p> <p>REPORT CREATED: 26-Jan-24 REPORT NUMBER: 23120022</p> <p style="text-align: right;">VERSION Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120022-003	Antimony		298 ng/Filter	0.30	AC-021	20-Jan-24
23120022-003	Arsenic		1250 ng/Filter	0.30	AC-021	20-Jan-24
23120022-003	Barium	K, T, U	< 300 ng/Filter	300	AC-021	20-Jan-24
23120022-003	Beryllium		72.4 ng/Filter	0.60	AC-021	20-Jan-24
23120022-003	Boron		5250000 ng/Filter	600	AC-021	20-Jan-24
23120022-003	Cadmium		196 ng/Filter	0.80	AC-021	20-Jan-24
23120022-003	Chromium		5360 ng/Filter	20	AC-021	20-Jan-24
23120022-003	Cobalt		1030 ng/Filter	0.50	AC-021	20-Jan-24
23120022-003	Copper		826000 ng/Filter	20	AC-021	20-Jan-24
23120022-003	Iron		3210000 ng/Filter	80	AC-021	20-Jan-24
23120022-003	Lead		10400 ng/Filter	0.70	AC-021	20-Jan-24
23120022-003	Manganese		110000 ng/Filter	1.0	AC-021	20-Jan-24
23120022-003	Mercury		3.98 ng/Filter	0.70	AC-021	20-Jan-24
23120022-003	Nickel		4100 ng/Filter	5.0	AC-021	20-Jan-24
23120022-003	Selenium		673 ng/Filter	4.0	AC-021	20-Jan-24
23120022-003	Silver		422 ng/Filter	0.50	AC-021	20-Jan-24
23120022-003	Thallium		21.4 ng/Filter	0.20	AC-021	20-Jan-24



PO Bag 4000
 Vegreville, Alberta
 Canada T9C 1T4
 (780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
HiVol Test # 875 - Filter # HVF-23-10-03		Air Filter	02-Dec-23 0:00
DESCRIPTION:	HiVol Filter		
REPORT NUMBER:	23120022	REPORT CREATED:	26-Jan-24
			VERSION Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120022-003	Tin		332 ng/Filter	0.20	AC-021	20-Jan-24
23120022-003	Uranium		179 ng/Filter	0.200	AC-021	20-Jan-24
23120022-003	Vanadium		5420 ng/Filter	0.40	AC-021	20-Jan-24
23120022-003	Zinc	K, T, U	< 1000 ng/Filter	1000	AC-021	20-Jan-24
23120022-003	Particulate Weight		101 mg	0.1	Research	07-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 26, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at <https://directory.cala.ca/>

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
PM10 Test # 875 - Filter # AT85238		Air Filter	02-Dec-23 0:00
DESCRIPTION:	PM10 Filter		
REPORT NUMBER:	23120022	REPORT CREATED:	26-Jan-24
			VERSION Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120022-002	Antimony		12.0 ng/Filter	0.03	AC-021	19-Jan-24
23120022-002	Arsenic		17.2 ng/Filter	0.03	AC-021	19-Jan-24
23120022-002	Barium		413 ng/Filter	0.3	AC-021	19-Jan-24
23120022-002	Beryllium		0.58 ng/Filter	0.06	AC-021	19-Jan-24
23120022-002	Boron		80.2 ng/Filter	0.6	AC-021	19-Jan-24
23120022-002	Cadmium		2.04 ng/Filter	0.08	AC-021	19-Jan-24
23120022-002	Chromium		38 ng/Filter	2	AC-021	19-Jan-24
23120022-002	Cobalt		7.26 ng/Filter	0.05	AC-021	19-Jan-24
23120022-002	Copper		787 ng/Filter	2	AC-021	19-Jan-24
23120022-002	Iron		27000 ng/Filter	8	AC-021	19-Jan-24
23120022-002	Lead		47.1 ng/Filter	0.07	AC-021	19-Jan-24
23120022-002	Manganese		830 ng/Filter	0.1	AC-021	19-Jan-24
23120022-002	Mercury	K, T, U	< 0.07 ng/Filter	0.07	AC-021	19-Jan-24
23120022-002	Nickel		23.5 ng/Filter	0.5	AC-021	19-Jan-24
23120022-002	Selenium		7.6 ng/Filter	0.4	AC-021	19-Jan-24
23120022-002	Silver		0.71 ng/Filter	0.05	AC-021	19-Jan-24
23120022-002	Thallium		0.35 ng/Filter	0.02	AC-021	19-Jan-24
23120022-002	Tin		5.75 ng/Filter	0.02	AC-021	19-Jan-24
23120022-002	Uranium		1.22 ng/Filter	0.020	AC-021	19-Jan-24
23120022-002	Vanadium		45.0 ng/Filter	0.04	AC-021	19-Jan-24
23120022-002	Zinc		586 ng/Filter	1	AC-021	19-Jan-24
23120022-002	Particulate Weight		0.728 mg	0.004	AC-029	12-Dec-23

CLIENT SAMPLE ID VOCs and TNMOC Test # 875	CANISTER ID 32212	Matrix Ambient Air	DATE SAMPLED 02-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 23120022	REPORT CREATED: 26-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23120022-001	Total Non-Methane Organic Carbon	K, T, U	< 0.08	ppmv	0.08	NA-028	07-Dec-23
23120022-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08	ppbv	0.08	AC-058	13-Dec-23
23120022-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	1-Butene/Isobutylene	K, T, U	< 0.10	ppbv	0.10	AC-058	13-Dec-23
23120022-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.12	ppbv	0.12	AC-058	13-Dec-23
23120022-001	1-Pentene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	2,2,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	2,2-Dimethylbutane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	2,3,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	2,3-Dimethylbutane	K, T, U	< 0.15	ppbv	0.15	AC-058	13-Dec-23
23120022-001	2,3-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	2,4-Dimethylpentane	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	2-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	2-Methylhexane	I	0.06	ppbv	0.05	AC-058	13-Dec-23
23120022-001	2-Methylpentane		0.44	ppbv	0.03	AC-058	13-Dec-23
23120022-001	3-Methylheptane	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	3-Methylhexane	I	0.07	ppbv	0.03	AC-058	13-Dec-23
23120022-001	3-Methylpentane	I	0.16	ppbv	0.03	AC-058	13-Dec-23
23120022-001	Benzene	I	0.19	ppbv	0.05	AC-058	13-Dec-23
23120022-001	cis-2-Butene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	Cyclohexane	I	0.07	ppbv	0.07	AC-058	13-Dec-23
23120022-001	Cyclopentane	I	0.05	ppbv	0.03	AC-058	13-Dec-23
23120022-001	Ethylbenzene		0.38	ppbv	0.05	AC-058	13-Dec-23

Report certified by: Andrea Conner, Admin Assistant

Date: January 26, 2024

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On behalf of: Adam Malcolm, Manager, Chemical Testing

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test # 875	CANISTER ID 32212	Matrix Ambient Air	DATE SAMPLED 02-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 23120022	REPORT CREATED: 26-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23120022-001	Isobutane		2.01	ppbv	0.05	AC-058	13-Dec-23
23120022-001	Isopentane		1.20	ppbv	0.07	AC-058	13-Dec-23
23120022-001	Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	Isopropylbenzene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Dec-23
23120022-001	m,p-Xylene	I	0.22	ppbv	0.07	AC-058	13-Dec-23
23120022-001	m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	m-Ethyltoluene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	Methylcyclohexane	I	0.12	ppbv	0.03	AC-058	13-Dec-23
23120022-001	Methylcyclopentane	I	0.12	ppbv	0.08	AC-058	13-Dec-23
23120022-001	n-Butane		3.89	ppbv	0.03	AC-058	13-Dec-23
23120022-001	n-Decane	K, T, U	< 0.10	ppbv	0.10	AC-058	13-Dec-23
23120022-001	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Dec-23
23120022-001	n-Heptane	I	0.09	ppbv	0.07	AC-058	13-Dec-23
23120022-001	n-Hexane	I	0.26	ppbv	0.05	AC-058	13-Dec-23
23120022-001	n-Octane	I	0.04	ppbv	0.03	AC-058	13-Dec-23
23120022-001	n-Pentane		0.86	ppbv	0.07	AC-058	13-Dec-23
23120022-001	n-Propylbenzene	K, T, U	< 0.10	ppbv	0.10	AC-058	13-Dec-23
23120022-001	n-Undecane	K, T, U	< 0.8	ppbv	0.8	AC-058	13-Dec-23
23120022-001	n-Nonane	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Dec-23
23120022-001	o-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	o-Xylene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Dec-23
23120022-001	p-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Dec-23
23120022-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Dec-23
23120022-001	Styrene	I	0.24	ppbv	0.07	AC-058	13-Dec-23
23120022-001	Toluene		0.37	ppbv	0.05	AC-058	13-Dec-23

Report certified by: Andrea Conner, Admin Assistant

Date: January 26, 2024

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On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID VOCs and TNMOC Test # 875	CANISTER ID 32212	Matrix Ambient Air	DATE SAMPLED 02-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 23120022	REPORT CREATED: 26-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120022-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	13-Dec-23
23120022-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	13-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 26, 2024

Inquiries: (780) 632 8403

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Revision History

Order ID	Ver	Date	Reason
23120022	01	26-Jan-24	Report created

Methods

Method	Description
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector
Research	Research method

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Order Comments

23120022

Test # 875. Send results to Stan Yuha.



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Sample Comments



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TEST REPORT

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Result Comments

Note:

- 1. Results relate only to items tested and apply to the sample as received.*
- 2. This report shall not be reproduced, except in full, without the explicit approval of the laboratory.*



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p> <p>INVOICE: Stephanie Dennis PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID</p> <p>HI-VOL Test Number: 876 - HVF-23-10-02</p> <p>CANISTER ID: HVF-23-10-02</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION:</p> <p>DATE SAMPLED: 08-Dec-23 0:00 DATE RECEIVED: 14-Dec-23</p> <p>REPORT CREATED: 22-Jan-24 REPORT NUMBER: 23120119</p> <p style="text-align: right;">VERSION: Version 01</p>	<p style="text-align: center;">Matrix</p> <p>Air Filter</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120119-003	Particulate Weight		32.1 mg	0.1	Research	20-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID PM10 Quarter 4 Field Blank - AT85100	CANISTER ID PM10 Filter	Matrix Air Filter	DATE SAMPLED 11-Dec-23 15:55
DESCRIPTION:			
REPORT NUMBER: 23120119	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120119-004	Particulate Weight	K, T, U	< 0.004 mg	0.004	AC-029	18-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID PM10 Test Number: 876 - AT85237	CANISTER ID AT85237	Matrix Air Filter	DATE SAMPLED 08-Dec-23 0:00
DESCRIPTION:			
REPORT NUMBER: 23120119	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120119-002	Particulate Weight		0.184 mg	0.004	AC-029	18-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

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CLIENT SAMPLE ID VOCs and TNMOC Test Number: 876	CANISTER ID 28956	Matrix Ambient Air	DATE SAMPLED 08-Dec-23 0:00
DESCRIPTION:			
REPORT NUMBER: 23120119	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120119-001	Total Non-Methane Organic Carbon	K, T, U	< 0.08 ppmv	0.08	NA-028	14-Dec-23
23120119-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08 ppbv	0.08	AC-058	15-Dec-23
23120119-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	1-Butene/Isobutylene	K, T, U	< 0.10 ppbv	0.10	AC-058	15-Dec-23
23120119-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.11 ppbv	0.11	AC-058	15-Dec-23
23120119-001	1-Pentene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	2,2,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	2,2-Dimethylbutane	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	2,3-Dimethylbutane	K, T, U	< 0.14 ppbv	0.14	AC-058	15-Dec-23
23120119-001	2,3-Dimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	2,4-Dimethylpentane	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	2-Methylheptane	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	2-Methylhexane	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	2-Methylpentane		0.19 ppbv	0.03	AC-058	15-Dec-23
23120119-001	3-Methylheptane	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	3-Methylhexane	I	0.05 ppbv	0.03	AC-058	15-Dec-23
23120119-001	3-Methylpentane	I	0.13 ppbv	0.03	AC-058	15-Dec-23
23120119-001	Benzene	I	0.12 ppbv	0.05	AC-058	15-Dec-23
23120119-001	cis-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	Cyclohexane	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Dec-23
23120119-001	Cyclopentane	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	Ethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

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CLIENT SAMPLE ID VOCs and TNMOC Test Number: 876	CANISTER ID 28956	Matrix Ambient Air	DATE SAMPLED 08-Dec-23 0:00
DESCRIPTION:			
REPORT NUMBER: 23120119	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120119-001	Isobutane		1.79 ppbv	0.05	AC-058	15-Dec-23
23120119-001	Isopentane		1.03 ppbv	0.06	AC-058	15-Dec-23
23120119-001	Isoprene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	Isopropylbenzene	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Dec-23
23120119-001	m,p-Xylene	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Dec-23
23120119-001	m-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	m-Ethyltoluene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	Methylcyclohexane	I	0.05 ppbv	0.03	AC-058	15-Dec-23
23120119-001	Methylcyclopentane	I	0.15 ppbv	0.08	AC-058	15-Dec-23
23120119-001	n-Butane		3.67 ppbv	0.03	AC-058	15-Dec-23
23120119-001	n-Decane	K, T, U	< 0.10 ppbv	0.10	AC-058	15-Dec-23
23120119-001	n-Dodecane	K, T, U	< 0.5 ppbv	0.5	AC-058	15-Dec-23
23120119-001	n-Heptane	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Dec-23
23120119-001	n-Hexane		0.44 ppbv	0.05	AC-058	15-Dec-23
23120119-001	n-Octane	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	n-Pentane		0.69 ppbv	0.06	AC-058	15-Dec-23
23120119-001	n-Propylbenzene	K, T, U	< 0.10 ppbv	0.10	AC-058	15-Dec-23
23120119-001	n-Undecane	K, T, U	< 0.8 ppbv	0.8	AC-058	15-Dec-23
23120119-001	n-Nonane	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Dec-23
23120119-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	o-Xylene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23
23120119-001	p-Ethyltoluene	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Dec-23
23120119-001	Styrene	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Dec-23
23120119-001	Toluene	I	0.28 ppbv	0.05	AC-058	15-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID VOCs and TNMOC Test Number: 876	CANISTER ID 28956	Matrix Ambient Air	DATE SAMPLED 08-Dec-23 0:00
DESCRIPTION: REPORT NUMBER: 23120119		REPORT CREATED: 22-Jan-24	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120119-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Dec-23
23120119-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at <https://directory.cala.ca/>



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Revision History

Order ID	Ver	Date	Reason
23120119	01	22-Jan-24	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector
Research	Research method

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Order Comments

23120119

Project ID: Test 876. Report also to yuha.stan@cleanharbors.com



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Sample Comments



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 12 of 12

Result Comments

Note:

- 1. Results relate only to items tested and apply to the sample as received.*
- 2. This report shall not be reproduced, except in full, without the explicit approval of the laboratory.*



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB T0B 4A0</p> <p>INVOICE: Stephanie Dennis PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB T0B 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID</p> <p>HiVol Test #: 877, Flt # HVF-23-10-06</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: Hi-Vol Filter</p> <p>DATE SAMPLED: 14-Dec-23 0:00 DATE RECEIVED: 19-Dec-23</p> <p>REPORT CREATED: 25-Jan-24 REPORT NUMBER: 23120149</p> <p style="text-align: right;">VERSION Version 01</p>
---	--

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120149-003	Particulate Weight		31.0 mg	0.1	Research	02-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 25, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID PM10 Test #: 877, Flt # AT76602	CANISTER ID	Matrix Air Filter	DATE SAMPLED 14-Dec-23 0:00
DESCRIPTION: PM10 Filter	REPORT CREATED: 25-Jan-24	VERSION Version 01	
REPORT NUMBER: 23120149			

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120149-002	Particulate Weight		0.102 mg	0.004	AC-029	21-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 25, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at <https://directory.cala.ca/>

CLIENT SAMPLE ID VOCs and TNMOC Test #: 877	CANISTER ID 32261	Matrix Ambient Air	DATE SAMPLED 14-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 23120149	REPORT CREATED: 25-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120149-001	Total Non-Methane Organic Carbon	K, T, U	< 0.08 ppmv	0.08	NA-028	20-Dec-23
23120149-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08 ppbv	0.08	AC-058	20-Dec-23
23120149-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	20-Dec-23
23120149-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	20-Dec-23
23120149-001	1-Butene/Isobutylene	K, T, U	< 0.09 ppbv	0.09	AC-058	20-Dec-23
23120149-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.11 ppbv	0.11	AC-058	20-Dec-23
23120149-001	1-Pentene	K, T, U	< 0.05 ppbv	0.05	AC-058	20-Dec-23
23120149-001	2,2,4-Trimethylpentane	I	0.03 ppbv	0.03	AC-058	20-Dec-23
23120149-001	2,2-Dimethylbutane	K, T, U	< 0.03 ppbv	0.03	AC-058	20-Dec-23
23120149-001	2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	20-Dec-23
23120149-001	2,3-Dimethylbutane	K, T, U	< 0.14 ppbv	0.14	AC-058	20-Dec-23
23120149-001	2,3-Dimethylpentane	I	0.08 ppbv	0.03	AC-058	20-Dec-23
23120149-001	2,4-Dimethylpentane	K, T, U	< 0.05 ppbv	0.05	AC-058	20-Dec-23
23120149-001	2-Methylheptane	I	0.11 ppbv	0.03	AC-058	20-Dec-23
23120149-001	2-Methylhexane		0.21 ppbv	0.05	AC-058	20-Dec-23
23120149-001	2-Methylpentane		0.48 ppbv	0.03	AC-058	20-Dec-23
23120149-001	3-Methylheptane	K, T, U	< 0.05 ppbv	0.05	AC-058	20-Dec-23
23120149-001	3-Methylhexane		0.27 ppbv	0.03	AC-058	20-Dec-23
23120149-001	3-Methylpentane		0.21 ppbv	0.03	AC-058	20-Dec-23
23120149-001	Benzene	I	0.26 ppbv	0.05	AC-058	20-Dec-23
23120149-001	cis-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	20-Dec-23
23120149-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	20-Dec-23
23120149-001	Cyclohexane	I	0.17 ppbv	0.06	AC-058	20-Dec-23
23120149-001	Cyclopentane	I	0.08 ppbv	0.03	AC-058	20-Dec-23
23120149-001	Ethylbenzene		0.48 ppbv	0.05	AC-058	20-Dec-23

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 25, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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CLIENT SAMPLE ID VOCs and TNMOC Test #: 877	CANISTER ID 32261	Matrix Ambient Air	DATE SAMPLED 14-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 23120149	REPORT CREATED: 25-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23120149-001	Isobutane		0.86	ppbv	0.05	AC-058	20-Dec-23
23120149-001	Isopentane		0.97	ppbv	0.06	AC-058	20-Dec-23
23120149-001	Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Dec-23
23120149-001	Isopropylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	20-Dec-23
23120149-001	m,p-Xylene		1.55	ppbv	0.06	AC-058	20-Dec-23
23120149-001	m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Dec-23
23120149-001	m-Ethyltoluene	I	0.09	ppbv	0.05	AC-058	20-Dec-23
23120149-001	Methylcyclohexane		0.32	ppbv	0.03	AC-058	20-Dec-23
23120149-001	Methylcyclopentane		0.22	ppbv	0.08	AC-058	20-Dec-23
23120149-001	n-Butane		1.92	ppbv	0.03	AC-058	20-Dec-23
23120149-001	n-Decane	K, T, U	< 0.09	ppbv	0.09	AC-058	20-Dec-23
23120149-001	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	20-Dec-23
23120149-001	n-Heptane		0.41	ppbv	0.06	AC-058	20-Dec-23
23120149-001	n-Hexane		0.53	ppbv	0.05	AC-058	20-Dec-23
23120149-001	n-Octane		0.20	ppbv	0.03	AC-058	20-Dec-23
23120149-001	n-Pentane		0.84	ppbv	0.06	AC-058	20-Dec-23
23120149-001	n-Propylbenzene	K, T, U	< 0.09	ppbv	0.09	AC-058	20-Dec-23
23120149-001	n-Undecane	K, T, U	< 0.8	ppbv	0.8	AC-058	20-Dec-23
23120149-001	n-Nonane	I	0.12	ppbv	0.06	AC-058	20-Dec-23
23120149-001	o-Ethyltoluene	I	0.05	ppbv	0.03	AC-058	20-Dec-23
23120149-001	o-Xylene		0.37	ppbv	0.05	AC-058	20-Dec-23
23120149-001	p-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Dec-23
23120149-001	p-Ethyltoluene	I	0.07	ppbv	0.06	AC-058	20-Dec-23
23120149-001	Styrene	I	0.06	ppbv	0.06	AC-058	20-Dec-23
23120149-001	Toluene		5.09	ppbv	0.05	AC-058	20-Dec-23

Report certified by: Andrea Conner, Admin Assistant

Date: January 25, 2024

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On behalf of: Adam Malcolm, Manager, Chemical Testing

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test #: 877	CANISTER ID 32261	Matrix Ambient Air	DATE SAMPLED 14-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 23120149	REPORT CREATED: 25-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
23120149-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	20-Dec-23
23120149-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	20-Dec-23



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Revision History

Order ID	Ver	Date	Reason
23120149	01	25-Jan-24	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector
Research	Research method

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

Qualifiers

Data Qualifier	Translation
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B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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ENVIRONMENTAL ANALYTICAL SERVICES

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Order Comments

23120149

Project ID: Test # 877. Report also to Stan Yuha.



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Sample Comments



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Result Comments

Note:

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p> <p>INVOICE: Stephanie Dennis PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID HiVol Test # 878 - Filter # HVF-23-10-04</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: Hi-Vol Filter</p> <p>DATE SAMPLED: 20-Dec-23 0:00 DATE RECEIVED: 04-Jan-24</p> <p>REPORT CREATED: 22-Jan-24 REPORT NUMBER: 24010027</p> <p style="text-align: right;">VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010027-003	Particulate Weight		23.5 mg	0.1	Research	05-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID PM10 Test # 878 - Filter # AT85099	CANISTER ID	Matrix Air Filter	DATE SAMPLED 20-Dec-23 0:00
DESCRIPTION: PM10 Filter			
REPORT NUMBER: 24010027	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010027-002	Particulate Weight		0.155 mg	0.004	AC-029	05-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at <https://directory.cala.ca/>

CLIENT SAMPLE ID VOCs and TNMOC Test # 878	CANISTER ID 32249	Matrix Ambient Air	DATE SAMPLED 20-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 24010027	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010027-001	Total Non-Methane Organic Carbon	K, T, U	< 0.07 ppmv	0.07	NA-028	04-Jan-24
24010027-001	1,2,3-Trimethylbenzene	K, T, U	< 0.07 ppbv	0.07	AC-058	06-Jan-24
24010027-001	1,2,4-Trimethylbenzene	I	0.07 ppbv	0.04	AC-058	06-Jan-24
24010027-001	1,3,5-Trimethylbenzene	I	0.06 ppbv	0.04	AC-058	06-Jan-24
24010027-001	1-Butene/Isobutylene	K, T, U	< 0.09 ppbv	0.09	AC-058	06-Jan-24
24010027-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.10 ppbv	0.10	AC-058	06-Jan-24
24010027-001	1-Pentene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24
24010027-001	2,2,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	2,2-Dimethylbutane	I	0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	2,3-Dimethylbutane	K, T, U	< 0.13 ppbv	0.13	AC-058	06-Jan-24
24010027-001	2,3-Dimethylpentane	I	0.05 ppbv	0.03	AC-058	06-Jan-24
24010027-001	2,4-Dimethylpentane	I	0.05 ppbv	0.04	AC-058	06-Jan-24
24010027-001	2-Methylheptane	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	2-Methylhexane	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24
24010027-001	2-Methylpentane		0.22 ppbv	0.03	AC-058	06-Jan-24
24010027-001	3-Methylheptane	I	0.08 ppbv	0.04	AC-058	06-Jan-24
24010027-001	3-Methylhexane	I	0.06 ppbv	0.03	AC-058	06-Jan-24
24010027-001	3-Methylpentane	I	0.09 ppbv	0.03	AC-058	06-Jan-24
24010027-001	Benzene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24
24010027-001	cis-2-Butene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24
24010027-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	Cyclohexane	I	0.12 ppbv	0.06	AC-058	06-Jan-24
24010027-001	Cyclopentane	I	0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	Ethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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CLIENT SAMPLE ID VOCs and TNMOC Test # 878	CANISTER ID 32249	Matrix Ambient Air	DATE SAMPLED 20-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 24010027	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010027-001	Isobutane		0.60 ppbv	0.04	AC-058	06-Jan-24
24010027-001	Isopentane	K, T, U	< 0.06 ppbv	0.06	AC-058	06-Jan-24
24010027-001	Isoprene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	Isopropylbenzene	K, T, U	< 0.06 ppbv	0.06	AC-058	06-Jan-24
24010027-001	m,p-Xylene	K, T, U	< 0.06 ppbv	0.06	AC-058	06-Jan-24
24010027-001	m-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	m-Ethyltoluene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24
24010027-001	Methylcyclohexane	I	0.05 ppbv	0.03	AC-058	06-Jan-24
24010027-001	Methylcyclopentane	I	0.09 ppbv	0.07	AC-058	06-Jan-24
24010027-001	n-Butane		1.12 ppbv	0.03	AC-058	06-Jan-24
24010027-001	n-Decane	K, T, U	< 0.09 ppbv	0.09	AC-058	06-Jan-24
24010027-001	n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jan-24
24010027-001	n-Heptane	I	0.20 ppbv	0.06	AC-058	06-Jan-24
24010027-001	n-Hexane	I	0.22 ppbv	0.04	AC-058	06-Jan-24
24010027-001	n-Octane	I	0.09 ppbv	0.03	AC-058	06-Jan-24
24010027-001	n-Pentane		0.35 ppbv	0.06	AC-058	06-Jan-24
24010027-001	n-Propylbenzene	K, T, U	< 0.09 ppbv	0.09	AC-058	06-Jan-24
24010027-001	n-Undecane	K, T, U	< 0.7 ppbv	0.7	AC-058	06-Jan-24
24010027-001	n-Nonane	K, T, U	< 0.06 ppbv	0.06	AC-058	06-Jan-24
24010027-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	o-Xylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24
24010027-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010027-001	p-Ethyltoluene	K, T, U	< 0.06 ppbv	0.06	AC-058	06-Jan-24
24010027-001	Styrene	I	0.13 ppbv	0.06	AC-058	06-Jan-24
24010027-001	Toluene	I	0.06 ppbv	0.04	AC-058	06-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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CLIENT SAMPLE ID VOCs and TNMOC Test # 878	CANISTER ID 32249	Matrix Ambient Air	DATE SAMPLED 20-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 24010027	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010027-001	trans-2-Butene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jan-24
24010027-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

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Revision History

Order ID	Ver	Date	Reason
24010027	01	22-Jan-24	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector
Research	Research method

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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ENVIRONMENTAL ANALYTICAL SERVICES

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Order Comments

24010027

Project ID: Test # 878. Send results to Stan Yuha.



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ENVIRONMENTAL ANALYTICAL SERVICES

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Sample Comments



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Result Comments

Note:

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p> <p>INVOICE: Stephanie Dennis PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID HiVol Test # 879 - Filter # HVF-23-10-09</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: Hi-Vol Filter</p> <p>DATE SAMPLED: 26-Dec-23 0:00</p> <p>REPORT CREATED: 22-Jan-24</p>	<p>DATE RECEIVED: 04-Jan-24</p> <p>REPORT NUMBER: 24010029</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010029-003	Particulate Weight		24.1 mg	0.1	Research	05-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID PM10 Test # 879 - Filter # AT83614	CANISTER ID	Matrix Air Filter	DATE SAMPLED 26-Dec-23 0:00
DESCRIPTION: PM10 Filter			
REPORT NUMBER: 24010029	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010029-002	Particulate Weight		0.070 mg	0.004	AC-029	05-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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CLIENT SAMPLE ID VOCs and TNMOC Test # 879	CANISTER ID 29004	Matrix Ambient Air	DATE SAMPLED 26-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 24010029	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010029-001	Total Non-Methane Organic Carbon	K, T, U	< 0.08 ppmv	0.08	NA-028	04-Jan-24
24010029-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08 ppbv	0.08	AC-058	06-Jan-24
24010029-001	1,2,4-Trimethylbenzene	I	0.08 ppbv	0.05	AC-058	06-Jan-24
24010029-001	1,3,5-Trimethylbenzene	I	0.07 ppbv	0.05	AC-058	06-Jan-24
24010029-001	1-Butene/Isobutylene	K, T, U	< 0.10 ppbv	0.10	AC-058	06-Jan-24
24010029-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.12 ppbv	0.12	AC-058	06-Jan-24
24010029-001	1-Pentene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jan-24
24010029-001	2,2,4-Trimethylpentane	I	0.05 ppbv	0.03	AC-058	06-Jan-24
24010029-001	2,2-Dimethylbutane	I	0.04 ppbv	0.03	AC-058	06-Jan-24
24010029-001	2,3,4-Trimethylpentane	I	0.08 ppbv	0.03	AC-058	06-Jan-24
24010029-001	2,3-Dimethylbutane	K, T, U	< 0.15 ppbv	0.15	AC-058	06-Jan-24
24010029-001	2,3-Dimethylpentane	I	0.08 ppbv	0.03	AC-058	06-Jan-24
24010029-001	2,4-Dimethylpentane	I	0.06 ppbv	0.05	AC-058	06-Jan-24
24010029-001	2-Methylheptane	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010029-001	2-Methylhexane	I	0.16 ppbv	0.05	AC-058	06-Jan-24
24010029-001	2-Methylpentane		0.30 ppbv	0.03	AC-058	06-Jan-24
24010029-001	3-Methylheptane	I	0.10 ppbv	0.05	AC-058	06-Jan-24
24010029-001	3-Methylhexane		0.21 ppbv	0.03	AC-058	06-Jan-24
24010029-001	3-Methylpentane		0.21 ppbv	0.03	AC-058	06-Jan-24
24010029-001	Benzene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jan-24
24010029-001	cis-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jan-24
24010029-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010029-001	Cyclohexane	I	0.15 ppbv	0.07	AC-058	06-Jan-24
24010029-001	Cyclopentane	I	0.04 ppbv	0.03	AC-058	06-Jan-24
24010029-001	Ethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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CLIENT SAMPLE ID VOCs and TNMOC Test # 879	CANISTER ID 29004	Matrix Ambient Air	DATE SAMPLED 26-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 24010029	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010029-001	Isobutane		0.79 ppbv	0.05	AC-058	06-Jan-24
24010029-001	Isopentane	K, T, U	< 0.07 ppbv	0.07	AC-058	06-Jan-24
24010029-001	Isoprene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010029-001	Isopropylbenzene	K, T, U	< 0.07 ppbv	0.07	AC-058	06-Jan-24
24010029-001	m,p-Xylene	I	0.07 ppbv	0.07	AC-058	06-Jan-24
24010029-001	m-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010029-001	m-Ethyltoluene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jan-24
24010029-001	Methylcyclohexane	I	0.16 ppbv	0.03	AC-058	06-Jan-24
24010029-001	Methylcyclopentane		0.28 ppbv	0.08	AC-058	06-Jan-24
24010029-001	n-Butane		1.42 ppbv	0.03	AC-058	06-Jan-24
24010029-001	n-Decane	K, T, U	< 0.10 ppbv	0.10	AC-058	06-Jan-24
24010029-001	n-Dodecane	K, T, U	< 0.5 ppbv	0.5	AC-058	06-Jan-24
24010029-001	n-Heptane		0.43 ppbv	0.07	AC-058	06-Jan-24
24010029-001	n-Hexane		0.82 ppbv	0.05	AC-058	06-Jan-24
24010029-001	n-Octane	I	0.11 ppbv	0.03	AC-058	06-Jan-24
24010029-001	n-Pentane		0.45 ppbv	0.07	AC-058	06-Jan-24
24010029-001	n-Propylbenzene	K, T, U	< 0.10 ppbv	0.10	AC-058	06-Jan-24
24010029-001	n-Undecane	K, T, U	< 0.8 ppbv	0.8	AC-058	06-Jan-24
24010029-001	n-Nonane	K, T, U	< 0.07 ppbv	0.07	AC-058	06-Jan-24
24010029-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010029-001	o-Xylene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jan-24
24010029-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24
24010029-001	p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	06-Jan-24
24010029-001	Styrene	I	0.15 ppbv	0.07	AC-058	06-Jan-24
24010029-001	Toluene	I	0.25 ppbv	0.05	AC-058	06-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca

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CLIENT SAMPLE ID VOCs and TNMOC Test # 879	CANISTER ID 29004	Matrix Ambient Air	DATE SAMPLED 26-Dec-23 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 24010029	REPORT CREATED: 22-Jan-24		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010029-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jan-24
24010029-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jan-24

Report certified by: Andrea Conner, Admin Assistant

On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: January 22, 2024

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Revision History

Order ID	Ver	Date	Reason
24010029	01	22-Jan-24	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector
Research	Research method

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
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AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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ENVIRONMENTAL ANALYTICAL SERVICES

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Order Comments

24010029

Project ID: Test # 879. Send results to Stan Yuha.



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ENVIRONMENTAL ANALYTICAL SERVICES

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Sample Comments



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Result Comments

Note:

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<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB T0B 4A0</p> <p>INVOICE: Stephanie Dennis PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB T0B 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID Ryley Facility Test # 109 HVF-23-02-17</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION:</p> <p>DATE SAMPLED: 01-Dec-23 0:00 DATE RECEIVED: 04-Jan-24</p> <p>REPORT CREATED: 26-Jan-24 REPORT NUMBER: 24010028</p> <p style="text-align: right;">VERSION Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010028-001	Antimony		210 ng/Filter	0.30	AC-021	20-Jan-24
24010028-001	Arsenic		696 ng/Filter	0.30	AC-021	20-Jan-24
24010028-001	Barium	K, T, U	< 300 ng/Filter	300	AC-021	20-Jan-24
24010028-001	Beryllium	K, T, U	< 0.60 ng/Filter	0.60	AC-021	20-Jan-24
24010028-001	Boron		3670000 ng/Filter	600	AC-021	20-Jan-24
24010028-001	Cadmium		710 ng/Filter	0.80	AC-021	20-Jan-24
24010028-001	Chromium		10900 ng/Filter	20	AC-021	20-Jan-24
24010028-001	Cobalt		489 ng/Filter	0.50	AC-021	20-Jan-24
24010028-001	Copper		96400 ng/Filter	20	AC-021	20-Jan-24
24010028-001	Iron		1470000 ng/Filter	80	AC-021	20-Jan-24
24010028-001	Lead		27900 ng/Filter	0.70	AC-021	20-Jan-24
24010028-001	Manganese		148000 ng/Filter	1.0	AC-021	20-Jan-24
24010028-001	Mercury	K, T, U	< 0.70 ng/Filter	0.70	AC-021	20-Jan-24
24010028-001	Nickel		4200 ng/Filter	5.0	AC-021	20-Jan-24
24010028-001	Selenium		524 ng/Filter	4.0	AC-021	20-Jan-24
24010028-001	Silver		181 ng/Filter	0.50	AC-021	20-Jan-24
24010028-001	Thallium		25.9 ng/Filter	0.20	AC-021	20-Jan-24

CLIENT SAMPLE ID Ryley Facility Test # 109 HVF-23-02-17	CANISTER ID	Matrix Air Filter	DATE SAMPLED 01-Dec-23 0:00
DESCRIPTION:			
REPORT NUMBER: 24010028	REPORT CREATED: 26-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010028-001	Tin		349 ng/Filter	0.20	AC-021	20-Jan-24
24010028-001	Uranium		53.7 ng/Filter	0.200	AC-021	20-Jan-24
24010028-001	Vanadium		2600 ng/Filter	0.40	AC-021	20-Jan-24
24010028-001	Zinc	K, T, U	< 1000 ng/Filter	1000	AC-021	20-Jan-24
24010028-001	Zirconium		759 ng/Filter	1.0	AC-021	20-Jan-24
24010028-001	Particulate Weight		147 mg	0.1	Research	05-Jan-24

CLIENT SAMPLE ID Ryley School Test # 109 HVF-23-02-18	CANISTER ID	Matrix Air Filter	DATE SAMPLED 01-Dec-23 0:00
DESCRIPTION:			
REPORT NUMBER: 24010028	REPORT CREATED: 26-Jan-24		VERSION Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
24010028-002	Antimony		49.1 ng/Filter	0.30	AC-021	20-Jan-24
24010028-002	Arsenic		327 ng/Filter	0.30	AC-021	20-Jan-24
24010028-002	Barium		634000 ng/Filter	300	AC-021	20-Jan-24
24010028-002	Beryllium	K, T, U	< 0.60 ng/Filter	0.60	AC-021	20-Jan-24
24010028-002	Boron		2290000 ng/Filter	600	AC-021	20-Jan-24
24010028-002	Cadmium		213 ng/Filter	0.80	AC-021	20-Jan-24
24010028-002	Chromium		1740 ng/Filter	20	AC-021	20-Jan-24
24010028-002	Cobalt		169 ng/Filter	0.50	AC-021	20-Jan-24
24010028-002	Copper		91600 ng/Filter	20	AC-021	20-Jan-24
24010028-002	Iron		378000 ng/Filter	80	AC-021	20-Jan-24
24010028-002	Lead		2310 ng/Filter	0.70	AC-021	20-Jan-24
24010028-002	Manganese		20900 ng/Filter	1.0	AC-021	20-Jan-24
24010028-002	Mercury	K, T, U	< 0.70 ng/Filter	0.70	AC-021	20-Jan-24
24010028-002	Nickel		1350 ng/Filter	5.0	AC-021	20-Jan-24
24010028-002	Selenium		564 ng/Filter	4.0	AC-021	20-Jan-24
24010028-002	Silver		62.8 ng/Filter	0.50	AC-021	20-Jan-24
24010028-002	Thallium		7.08 ng/Filter	0.20	AC-021	20-Jan-24
24010028-002	Tin		2160 ng/Filter	0.20	AC-021	20-Jan-24
24010028-002	Uranium		5.63 ng/Filter	0.200	AC-021	20-Jan-24
24010028-002	Vanadium		985 ng/Filter	0.40	AC-021	20-Jan-24
24010028-002	Zinc	K, T, U	< 1000 ng/Filter	1000	AC-021	20-Jan-24
24010028-002	Zirconium		1670 ng/Filter	1.0	AC-021	20-Jan-24
24010028-002	Particulate Weight		114 mg	0.1	Research	05-Jan-24

Report certified by: Andrea Conner, Admin Assistant

Date: January 26, 2024

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at <https://directory.cala.ca/>

On behalf of: Adam Malcolm, Manager, Chemical Testing

Inquiries: (780) 632 8403

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Revision History

Order ID	Ver	Date	Reason
24010028	01	26-Jan-24	Report created

Methods

Method	Description
AC-021 Research	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS Research method

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

Qualifiers

Data Qualifier	Translation
-----------------------	--------------------

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 7 of 9

Order Comments

24010028

Send results to Stan Yuha. Quote QT140005



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 8 of 9

Sample Comments



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 9 of 9

Result Comments

Note:

- 1. Results relate only to items tested and apply to the sample as received.*
- 2. This report shall not be reproduced, except in full, without the explicit approval of the laboratory.*

Sample ID: 24010028-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: Ryley Facility Test # 109 HVF-23-02-17
Vegreville, AB T9C 1T4
Phone: (780) 632-8284 Fax: (780) 632-8620
Shipping: Highway 16 A & 75 St

ical Services

ANALYSIS REQUEST FORM

Project Code: _____
Client Code: _____
Invoice Code: _____
Date Rec'd (D/M/Y): _____
Rec'd By: _____



FOR AITF USE ONLY

Client details:



Contact: _____
Company: _____
Project ID: _____
Address: _____
Telephone: _____
Email: _____

Jorge A. Mendoza
Laboratory Manager
780.663.3828 Ext. 235
Home Office 780.663.2342
Mobile 780.934.2342
Fax 780.663.3539
Direct Line 780.663.2513
mendoza.jorge@cleanharbors.com

"People & Technology Creating a Safer, Cleaner Environment"

Special Instructions/Comments:

PO # 238539
Quote ID: QT140005

RUSH (Surcharge):

AITF Contact: _____

Tel: _____

Email: _____

Sample ID	Sample Source Description	Date/Time Sampled		Analysis Requested
		Date (dd/mm/yy)	From/To	
Ryley Facility Test # 109	Filter Number # HV-23-02-17	1/12/23 1/1/24	10.30 hrs	Particulate weight ICP-MS analysis
Ryley School Test # 109	Filter Number # HV-23-02-18	1/12/23 1/1/24	9.39 hrs	Particulate weight ICP-MS analysis



HAIN OF CUSTODY FORM

Environmental Analytical Services
 Highway 16A & 75 Street
 Vegreville, AB T9C 1T4
 Phone: 780-632-8403
 Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca

Customer ID: Clean Harbours
 Cust Samp ID: VOCs and TNMOC Test # 875

<p>Client Reporting Information</p> <p>Company: Clean Harbours Canada, Inc Address: PO Box 390, 50114 Range Road 173, Ryley, AB T0B 4A0 Contact: Todd Webb or Stan Yuha Phone: 780-663-2513 or 780-663-3828 Email: Webb.Todd@cleanharbours.com, Yuha.Stan@cleanharbours.com</p>	<p>Client Billing Information</p> <p>Contact: Stephanie Dennis Phone: 780-663-3828 Email: Dennis.Stephanie@cleanharbours.com Project ID: Test 875 PO #: 0000238012</p>	<p>Turnaround Time</p> <p>X Normal (10 business days) Rush</p> <p>Note: Rush service not available for all tests. Confirm rush requests with InnoTech Alberta.</p>
<p>Date Received – Lab Use Only</p> <div style="border: 2px solid blue; padding: 5px; display: inline-block;"> <p style="color: blue; font-weight: bold; font-size: 1.2em;">RECEIVED</p> <p style="color: red; font-weight: bold; font-size: 1.2em;">DEC 06 2023</p> </div>		

Special Instructions/Comments:
 *If either PM10 or HI-VOL filter exceeds its trigger weight, then both filters are analyzed for metals
 If neither filter exceeds its trigger weight, neither filter is analyzed for metals
 If metals analysis is required, please report on the same report as filter weights and VOCs/TNMOC
Trigger Weight for Analysis (PM10): 1.22 mg
Trigger Weight for Analysis (HI-VOL): 91.1 mg

Lab Sample No.	Client Sample ID	Sample Source/Description	Canister Number/Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
	VOCs and TNMOC Test Number: 875	Canister	32212	02/12/23 03/12/23	00:00 00:00	VOC PAMS & TNMOC
	PM10 Test Number: 875	PM10 filter	AT85238	02/12/23 03/12/23	00:00 00:00	FLT Particulate Weight (& metals if over trigger weight)*
	HI-VOL Test Number: 875	HI-VOL Filter	HVF-23-10-03	02/12/23 03/12/23	00:00 00:00	Particulate Weight (& metals if over trigger weight)*
					Total: 23.78 hrs	

Client Authorization: _____ Laboratory Personnel: _____
 (Signature) (Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.



Canister ID: 32212

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ on: SEP 28 2023

Evacuated: OCT 17 2023 Recertified: _____

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: <u>Test 875</u>	
Sampled By: <u>T. W</u>	
Starting Vacuum: <u>-27.3</u> "Hg	End Vacuum: <u>-4⁻⁵</u> "Hg/psig

Sample ID: 23120022-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: VOCs and TNMOC Test # 875

TERMS AND CONDITIONS

The attached document entitled "**Chain of Custody Form**" is subject to the following Terms and Conditions, unless otherwise specified on the Quotation. InnoTech Alberta's commencement of the Services shall be deemed acceptance of the terms and conditions by the Client.

1. Any proposal contained herein is prepared for the consideration of the Client only. Its contents may not be used or disclosed to any other party without prior written consent of the INNOTECH ALBERTA INC. (hereinafter referred to as "InnoTech Alberta").
2. InnoTech Alberta will perform the Services in accordance with normal professional standards.
3. The delivery time for performance of the Services (as set out on the front page of this Quotation) is approximate and may be changed by InnoTech Alberta giving written notice to the Client.
4. InnoTech Alberta will exercise due care and proficiency in testing items submitted by a Client. InnoTech Alberta shall not, however, be liable to the Client for any damage or loss caused to the item being tested or for any damage, loss or expense caused by any delay in carrying out the test, including any damage, loss or expense resulting from InnoTech Alberta's negligence. InnoTech Alberta shall not be responsible for any damage, which is a natural or necessary result of any testing procedure.
5. For the purposes of this Quotation, Intellectual Property means all information, data, artistic and literary works, concepts, designs, processes, software, algorithms and inventions, including, without limitation, those that could be the subject of patent, copyright, industrial design, trade secret or other forms of protection. Intellectual Property which was owned by either InnoTech Alberta or the Client prior to the signing of this Agreement remains the property of that party. Nothing in this Agreement shall operate as a license, permission or grant of any other rights to either InnoTech Alberta's or the Client's Intellectual Property.
6. All data, reports and other information relating to the Services shall be treated by InnoTech Alberta as the confidential property of the Client, and InnoTech Alberta will use reasonable efforts to ensure that its employees, contractors and agents will not disclose the same to any other person, firm or corporation during the term of this Agreement and for a period of five (5) years after the date of termination of the Agreement. The obligation of confidentiality set out herein shall not apply to any information that was in InnoTech Alberta's possession prior to receipt from the Client or which is or becomes part of the public domain through no act or failure on the part of InnoTech Alberta. The obligation of confidentiality set out in this Section shall not prevent the disclosure of information to any level of government having jurisdiction to make lawful demand therefor, or required to be disclosed by any applicable law. Any records required to be maintained by InnoTech Alberta pursuant to this Agreement are subject to the protection and access provisions of the Freedom of Information and Protection of Privacy Act (Alberta).
7. The reported results of any InnoTech Alberta tests or evaluations performed on samples or items provided by the Client shall be interpreted as being specific to the sample or item tested. InnoTech Alberta makes no representation that any similar or related untested samples or items would produce the same results.
8. The Client shall not use InnoTech Alberta's name in any advertising material, sale offer, news releases, public statements or announcements, whether written or oral relating to the Services or the results thereof, without the prior written consent of InnoTech Alberta.
9. Records, test data, reports and samples, except where shipped to the Client after completion of the work shall be retained by InnoTech Alberta according to InnoTech Alberta's approved Records Retention and Disposition Schedule.
10. Prices quoted are in Canadian Dollars unless otherwise stated in writing and are exclusive of any provincial, municipal, sales, use or goods and services tax.
11. Prices quoted do not include shipping, insurance or cost of consumables. The Client shall be responsible for all costs incurred by InnoTech Alberta in collecting any item for testing and returning the item to the Client after testing and shall be responsible for all necessary incidental costs incurred by InnoTech Alberta in providing the Services. InnoTech Alberta will not be responsible for any damage or loss to items during shipping and it is the responsibility of the Client to arrange and pay for any insurance it deems necessary.

Sample ID: 23120022-003 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: HiVol Test # 875 - Filter # HVF-23-10-C

12. Any test samples or other materials supplied by the Client to InnoTech Alberta may, at InnoTech Alberta's option, be returned by InnoTech Alberta to the Client. The Client shall:

- (a) be responsible for all costs associated with the handling, transportation and disposal of such materials;
- (b) reimburse InnoTech Alberta for any costs incurred by InnoTech Alberta associated with the handling, transportation and disposal of such materials; and
- (c) indemnify and hold InnoTech Alberta harmless from any and all claims, damages or actions associated with the handling, transportation and disposal of such materials.

13. The Client shall pay all invoices rendered by InnoTech Alberta to the Client within thirty (30) days from the date of invoice, without deduction or set-off.

14. If the Client fails to pay any amount under this Agreement, such unpaid amount shall bear interest at a rate per month equal to one (1%) percent (or 12.6825% per annum) with interest on overdue interest at the same rate.

15. InnoTech Alberta makes no representation, warranties or conditions, either expressed or implied, statutory or otherwise and does not warrant the quality, state, merchantability or fitness for any purpose of any goods or products to be delivered pursuant to this Agreement. The Client accepts the results of these Services or items tested as is, and acknowledges that any use or interpretation of the information contained is at the Client's own risk.

16. In no event shall InnoTech Alberta be liable for any indirect or consequential damage or loss suffered by the Client, including loss of anticipated profits.

17. The Client shall indemnify and hold harmless InnoTech Alberta from any and all claims, demands, actions and costs (including legal costs on a solicitor-client basis) that may arise out of:

- (a) any dangerous defect or content in the item being tested, whether apparent or not, which dangerous defect or content was not disclosed in writing to InnoTech Alberta by the Client at the time the item was submitted for testing;
- (b) differences between those items actually tested and items previously or subsequently produced which are purported to be identical to the item tested; or
- (c) any use of the tested item or any item incorporating the tested item, whether by the Client or a third party following its return to the Client.

The hold harmless shall survive this Agreement.

18. The Client shall, at its own expense and without limiting its liabilities herein, be responsible for insuring its operation in an amount not less than \$2,000,000 inclusive per occurrence, insuring against bodily injury, and property damage including loss of use thereof. Further, the Client is responsible for insuring all owned property directly or indirectly related to this Agreement and InnoTech Alberta shall have no liability for any loss or damage to such property. 19. InnoTech Alberta shall maintain the following insurance: (i) commercial general liability insurance (including cross liability, severability of interests, non-owned automobile liability) in the amount of two million dollars (\$2,000,000.00) per occurrence, and; (ii) professional liability and errors and omissions insurance in the amount of one million dollars (\$1,000,000.00) per claim, and two million dollars (\$2,000,000.00) in the aggregate. In addition, InnoTech Alberta shall maintain all workers' compensation coverage required by applicable laws. Notwithstanding the foregoing, InnoTech Alberta reserves the right to supplement or add insurance coverage from time to time as may be required in its sole discretion.

20. The Client agrees to comply with all InnoTech Alberta Safety & Security regulations in effect while on InnoTech Alberta premises.

21. This Agreement represents the entire agreement between the parties and shall supersede all prior agreements relative to this transaction.

22. InnoTech Alberta shall not be liable to the Client for any failure or delay in performance of its obligations caused by circumstances beyond its control, including but not limited to acts of God, strikes, laws imposed after the fact, governmental restrictions, riots, wars, civil disorder, rebellion, sabotage, fire, flood, explosion, earthquake or other disasters.

23. InnoTech Alberta may assign this Quotation to an "affiliated" (as that term is defined at Section 2 of the Business Corporations Act (Alberta)) or successor entity on written notice to the Client.

24. This Quotation and rights and parties thereto shall be governed by and construed according to the laws of the Province of Alberta. The parties hereby submit to the jurisdiction of the Courts of Alberta.



Client Reporting Information

Company: Clean Harbors Canada, Inc
PO Box 390, 50114 Range Road 173,
Ryley, AB T0B 4A0
Contact: Todd Webb or Stan Yuha
Phone: 780-663-2513 or 780-663-3828
Email: Webb.Todd@cleanharbors.com,
Yuha.Stan@cleanharbors.com

Client Billing Information

Customer ID: Clean Harbours
Cust Sump ID: VOCs and TNMOC Test Number: 873
Contact: Stephanie Dennis
Phone: 780-663-3828
Email: Dennis.Stephanie@cleanharbors.com
Project ID: Test 876
PO #: 0000238012

Turnaround Time

X Normal (10 business days)
Rush
Note: Rush service not available for all tests.
Confirm rush requests with InnoTech Alberta.

Special Instructions/Comments:

*If either PM10 or HI-VOL filter exceeds its trigger weight, then both filters are analyzed for metals
If neither filter exceeds its trigger weight, neither filter is analyzed for metals
If metals analysis is required, please report on the same report as filter weights and VOCs/TNMOC
Trigger Weight for Analysis (PM10): 1.25 mg
Trigger Weight for Analysis (HI-VOL): 92.3 mg

Date Received – Lab Use Only



Lab Sample No.	Client Sample ID	Sample Source/ Description	Canister Number/ Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
1		VOCs and TNMOC Test Number: 876		08/12/23	00:00	VOC PAMS & TNMOC
2		PM10 Test Number: 876	AT85237	08/12/23	00:00	FLT Particulate Weight (& metals if over trigger weight)*
3		HI-VOL Test Number: 876	HVF-23-10-02	08/12/23	00:00	Particulate Weight (& metals if over trigger weight)*
				09/12/23	00:00	
4		PM10 Quarter 4 Field Blank	AT85100	11/12/23	15:55	FLT Particulate Weight & metals
					Total: 24.09 hrs	

Client Authorization: _____

(Signature)

Laboratory Personnel: _____

(Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.

Sample ID: 23120119-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: VOCs and TNMOC Test Number: 873



Canister ID: 28956

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISR on: SEP 18 2023

Evacuated: OCT 23 2023 Recertified: _____

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: Test 876

Sampled By: T. Webb

Starting Vacuum:

-27.4 "Hg

End Vacuum: mm

-4 "Hg/psig

TERMS AND CONDITIONS

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6. All data, reports and other information relating to the Services shall be treated by InnoTech Alberta as the confidential property of the Client, and InnoTech Alberta will use reasonable efforts to ensure that its employees, contractors and agents will not disclose the same to any other person, firm or corporation during the term of this Agreement and for a period of five (5) years after the date of termination of the Agreement. The obligation of confidentiality set out herein shall not apply to any information that was in InnoTech Alberta's possession prior to receipt from the Client or which is or becomes part of the public domain through no act or failure on the part of InnoTech Alberta. The obligation of confidentiality set out in this Section shall not prevent the disclosure of information to any level of government having jurisdiction to make lawful demand therefor, or required to be disclosed by any applicable law. Any records required to be maintained by InnoTech Alberta pursuant to this Agreement are subject to the protection and access provisions of the Freedom of Information and Protection of Privacy Act (Alberta).
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Sample ID: 23120119-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: VOCs and TMMOC Test Number: 873

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 14. If the Client fails to pay any amount under this Agreement, such unpaid amount shall bear interest at a rate per month equal to one (1%) percent (or 12.6825% per annum) with interest on overdue interest at the same rate.
 15. InnoTech Alberta makes no representation, warranties or conditions, either expressed or implied, statutory or otherwise and does not warrant the quality, state, merchantability or fitness for any purpose of any goods or products to be delivered pursuant to this Agreement. The Client accepts the results of these Services or items tested as is, and acknowledges that any use or interpretation of the information contained is at the Client's own risk.
 16. In no event shall InnoTech Alberta be liable for any indirect or consequential damage or loss suffered by the Client, including loss of anticipated profits.
 17. The Client shall indemnify and hold harmless InnoTech Alberta from any and all claims, demands, actions and costs (including legal costs on a solicitor-client basis) that may arise out of:
 - (a) any dangerous defect or content in the item being tested, whether apparent or not, which dangerous defect or content was not disclosed in writing to InnoTech Alberta by the Client at the time the item was submitted for testing;
 - (b) differences between those items actually tested and items previously or subsequently produced which are purported to be identical to the item tested; or
 - (c) any use of the tested item or any item incorporating the tested item, whether by the Client or a third party following its return to the Client.
 18. The Client shall, at its own expense and without limiting its liabilities herein, be responsible for insuring its operation in an amount not less than \$2,000,000 inclusive per occurrence, insuring against bodily injury, and property damage including loss of use thereof. Further, the Client is responsible for insuring all owned property directly or indirectly related to this Agreement and InnoTech Alberta shall have no liability for any loss or damage to such property.
 19. InnoTech Alberta shall maintain the following insurance: (i) commercial general liability insurance (including cross liability, severability of interests, non-owned automobile liability) in the amount of two million dollars (\$2,000,000.00) per occurrence; and, (ii) professional liability and errors and omissions insurance in the amount of one million dollars (\$1,000,000.00) per claim, and two million dollars (\$2,000,000.00) in the aggregate. In addition, InnoTech Alberta shall maintain all workers' compensation coverage required by applicable laws. Notwithstanding the foregoing, InnoTech Alberta reserves the right to supplement or add insurance coverage from time to time as may be required in its sole discretion.
 20. The Client agrees to comply with all InnoTech Alberta Safety & Security regulations in effect while on InnoTech Alberta premises.
 21. This Agreement represents the entire agreement between the parties and shall supersede all prior agreements relative to this transaction.
 22. InnoTech Alberta shall not be liable to the Client for any failure or delay in performance of its obligations caused by circumstances beyond its control, including but not limited to acts of God, strikes, laws imposed after the fact, governmental restrictions, riots, wars, civil disorder, rebellion, sabotage, fire, flood, explosion, earthquake or other disasters.
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 24. This Quotation and rights and parties thereto shall be governed by and construed according to the laws of the Province of Alberta. The parties hereby submit to the jurisdiction of the Courts of Alberta.





A SUBSIDIARY OF ALBERTA INNOVATES

Sample ID: 23120149-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: VOCs and TNMOC Test # 877

jn

Environmental Analytical Services
Highway 16A & 75 Street
Vegreville, AB T9C 1T4

Phone: 780-632-8403
Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca

Client Reporting Information

Company: Clean Harbours Canada, Inc
Address: PO Box 390, 50114 Range Road 173,
Ryley, AB T0B 4A0
Contact: Todd Webb or Stan Yuha
Phone: 780-663-2513 or 780-663-3828
Email: Webb.Todd@cleanharbours.com,
Yuha.Stan@cleanharbours.com

Contact: Stephanie Dennis
Phone: 780-663-3828
Email: Dennis.Stephanie@cleanharbours.com
Project ID: Test 877
PO #: 0000238012

Turnaround Time

X Normal (10 business days)
Rush
Note: Rush service not available for all tests.
Confirm rush requests with InnoTech Alberta.

Date Received - Lab Use Only



Special Instructions/Comments:

*If either PM10 or HI-VOL filter exceeds its trigger weight, then both filters are analyzed for metals
If neither filter exceeds its trigger weight, neither filter is analyzed for metals
If metals analysis is required, please report on the same report as filter weights and VOCs/TNMOC
Trigger Weight for Analysis (PM10): 1.21 mg
Trigger Weight for Analysis (HI-VOL): 93.1 mg

Lab Sample No.	Client Sample ID	Sample Source/Description	Canister Number/ Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
1		VOCs and TNMOC Test Canister	32261	14/12/23 15/12/23	00:00 00:00	VOC PAMS & TNMOC
2		PM10 Test Number: 877	AT76602	14/12/23	00:00	FLT Particulate Weight (& metals if over trigger weight)*
			HVF-23-10-06	14/12/23	00:00	
				15/12/23	00:00	
					Total: 24.31 hrs	Particulate Weight (& metals if over trigger weight)*
		HI-VOL Test Number: 877				
		HI-VOL Filter				

Client Authorization:

(Signature)

Laboratory Personnel: _____

(Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.



InnoTech
ALBERTA

This cleaned canister meets or exceeds TO-15 Method Specifications

Canister ID: ~~321993~~ 32261

Proofed by: LSQ on: JUL 27 2023

Evacuated: OCT 10 2023 Recertified: _____

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: 23120149-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: VOCs and TNMOC Test # 877

Sample ID: TS1 877

Sampled By: F. Webb

Starting Vacuum: -27.1 "Hg

End Vacuum: 5 "Hg/psig JMR

{00004084;2}
TERMS AND CONDITIONS



The attached document entitled "Chain and Conditions, unless otherwise specified" Customer ID: Clean Harbours and commencement of the Services shall be "Cust Samp ID: VOCs and TMMOC Test # 877 the Client."

1. Any proposal contained herein is prepared for the consideration of the Client only. Its contents may not be used or disclosed to any other party without prior written consent of the INNOTECH ALBERTA INC. (hereinafter referred to as "InnoTech Alberta").
2. InnoTech Alberta will perform the Services in accordance with normal professional standards.
3. The delivery time for performance of the Services (as set out on the front page of this Quotation) is approximate and may be changed by InnoTech Alberta giving written notice to the Client.
4. InnoTech Alberta will exercise due care and proficiency in testing items submitted by a Client. InnoTech Alberta shall not, however, be liable to the Client for any damage or loss caused to the item being tested or for any damage, loss or expense caused by any delay in carrying out the test, including any damage, loss or expense resulting from InnoTech Alberta's negligence. InnoTech Alberta shall not be responsible for any damage, which is a natural or necessary result of any testing procedure.
5. For the purposes of this Quotation, Intellectual Property means all information, data, artistic and literary works, concepts, designs, processes, software, algorithms and inventions, including, without limitation, those that could be the subject of patent, copyright, industrial design, trade secret or other forms of protection. Intellectual Property which was owned by either InnoTech Alberta or the Client prior to the signing of this Agreement remains the property of that party. Nothing in this Agreement shall operate as a license, permission or grant of any other rights to either InnoTech Alberta's or the Client's Intellectual Property.
6. All data, reports and other information relating to the Services shall be treated by InnoTech Alberta as the confidential property of the Client, and InnoTech Alberta will use reasonable efforts to ensure that its employees, contractors and agents will not disclose the same to any other person, firm or corporation during the term of this Agreement and for a period of five (5) years after the date of termination of the Agreement. The obligation of confidentiality set out herein shall not apply to any information that was in InnoTech Alberta's possession prior to receipt from the Client or which is or becomes part of the public domain through no act or failure on the part of InnoTech Alberta. The obligation of confidentiality set out in this Section shall not prevent the disclosure of information to any level of government having jurisdiction to make lawful demand therefor, or required to be disclosed by any applicable law. Any records required to be maintained by InnoTech Alberta pursuant to this Agreement are subject to the protection and access provisions of the Freedom of Information and Protection of Privacy Act (Alberta).
7. The reported results of any InnoTech Alberta tests or evaluations performed on samples or items provided by the Client shall be interpreted as being specific to the sample or item tested. InnoTech Alberta makes no representation that any similar or related untested samples or items would produce the same results.
8. The Client shall not use InnoTech Alberta's name in any advertising material, sale offer, news releases, public statements or announcements, whether written or oral relating to the Services or the results thereof, without the prior written consent of InnoTech Alberta.
9. Records, test data, reports and samples, except where shipped to the Client after completion of the work shall be retained by InnoTech Alberta according to InnoTech Alberta's approved Records Retention and Disposition Schedule.
10. Prices quoted are in Canadian Dollars unless otherwise stated in writing and are exclusive of any provincial, municipal, sales, use or goods and services tax.
11. Prices quoted do not include shipping, insurance or cost of consumables. The Client shall be responsible for all costs incurred by InnoTech Alberta in collecting any item for testing and returning the item to the Client after testing and shall be responsible for all necessary incidental costs incurred by InnoTech Alberta in providing the Services. InnoTech Alberta will not be responsible for any damage or loss to items during shipping and it is the responsibility of the Client to arrange and pay for any insurance it deems necessary.

12. Any test samples or other materials supplied by the Client to InnoTech Alberta may, at InnoTech Alberta's option, be returned by InnoTech Alberta to the Client. The Client shall:
 - (a) be responsible for all costs associated with the handling, transportation and disposal of such materials;
 - (b) reimburse InnoTech Alberta for any costs incurred by InnoTech Alberta associated with the handling, transportation and disposal of such materials; and
 - (c) indemnify and hold InnoTech Alberta harmless from any and all claims, damages or actions associated with the handling, transportation and disposal of such materials.
13. The Client shall pay all invoices rendered by InnoTech Alberta to the Client within thirty (30) days from the date of invoice, without deduction or set-off.
14. If the Client fails to pay any amount under this Agreement, such unpaid amount shall bear interest at a rate per month equal to one (1%) percent (or 12.6825% per annum) with interest on overdue interest at the same rate.
15. InnoTech Alberta makes no representation, warranties or conditions, either expressed or implied, statutory or otherwise and does not warrant the quality, state, merchantability or fitness for any purpose of any goods or products to be delivered pursuant to this Agreement. The Client accepts the results of these Services or items tested as is, and acknowledges that any use or interpretation of the information contained is at the Client's own risk.
16. In no event shall InnoTech Alberta be liable for any indirect or consequential damage or loss suffered by the Client, including loss of anticipated profits.
17. The Client shall indemnify and hold harmless InnoTech Alberta from any and all claims, demands, actions and costs (including legal costs on a solicitor-client basis) that may arise out of:
 - (a) any dangerous defect or content in the item being tested, whether apparent or not, which dangerous defect or content was not disclosed in writing to InnoTech Alberta by the Client at the time the item was submitted for testing;
 - (b) differences between those items actually tested and items previously or subsequently produced which are purported to be identical to the item tested; or
 - (c) any use of the tested item or any item incorporating the tested item, whether by the Client or a third party following its return to the Client.The hold harmless shall survive this Agreement.
18. The Client shall, at its own expense and without limiting its liabilities herein, be responsible for insuring its operation in an amount not less than \$2,000,000 inclusive per occurrence, insuring against bodily injury, and property damage including loss of use thereof. Further, the Client is responsible for insuring all owned property directly or indirectly related to this Agreement and InnoTech Alberta shall have no liability for any loss or damage to such property. 19. InnoTech Alberta shall maintain the following insurance: (i) commercial general liability insurance (including cross liability, severability of interests, non-owned automobile liability) in the amount of two million dollars (\$2,000,000.00) per occurrence, and; (ii) professional liability and errors and omissions insurance in the amount of one million dollars (\$1,000,000.00) per claim, and two million dollars (\$2,000,000.00) in the aggregate. In addition, InnoTech Alberta shall maintain all workers' compensation coverage required by applicable laws. Notwithstanding the foregoing, InnoTech Alberta reserves the right to supplement or add insurance coverage from time to time as may be required in its sole discretion. InnoTech Alberta may provide certificates of insurance for coverages outlined in (i) and (ii) above.
20. The Client agrees to comply with all InnoTech Alberta Safety & Security regulations in effect while on InnoTech Alberta premises.
21. This Agreement represents the entire agreement between the parties and shall supersede all prior agreements relative to this transaction.
22. InnoTech Alberta shall not be liable to the Client for any failure or delay in performance of its obligations caused by circumstances beyond its control, including but not limited to acts of God, strikes, laws imposed after the fact, governmental restrictions, riots, wars, civil disorder, rebellion, sabotage, fire, flood, explosion, earthquake or other disasters.
23. InnoTech Alberta may assign this Quotation to an "affiliated" (as that term is defined at Section 2 of the Business Corporations Act (Alberta)) or successor entity on written notice to the Client.
24. This Quotation and rights and parties thereto shall be governed by and construed according to the laws of the Province of Alberta. The parties hereby submit to the jurisdiction of the Courts of Alberta.

HAIN OF CUSTODY FORM

Environmental Analytical Services
 Highway 16A & 75 Street
 Vegreville, AB T9C 1T4
 Phone: 780-632-8403
 Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca



Customer ID: Clean Harbours
 Cust Samp ID: VOCs and TNMOC Test # 878

Client Reporting Information

Company: Clean Harbours Canada, Inc
 Address: PO Box 390, 50114 Range Road 173,
 Ryley, AB T0B 4A0
 Contact: Todd Webb or Stan Yuha
 Phone: 780-663-2513 or 780-663-3828
 Email: Webb.Todd@cleanharbours.com,
Yuha.Stan@cleanharbours.com

Client Billing Information

Contact: Stephanie Dennis
 Phone: 780-663-3828
 Email: Dennis.Stephanie@cleanharbours.com
 Project ID: Test 878
 PO #: 0000238012

Turnaround Time

X Normal (10 business days)
Rush
 Note: Rush service not available for all tests.
 Confirm rush requests with InnoTech Alberta.

Special Instructions/Comments:

*If either PM10 or HI-VOL filter exceeds its trigger weight, then both filters are analyzed for metals
 If neither filter exceeds its trigger weight, neither filter is analyzed for metals
 If metals analysis is required, please report on the same report as filter weights and VOCs/TNMOC

Trigger Weight for Analysis (PM10): 1.22 mg
 Trigger Weight for Analysis (HI-VOL): 92.2 mg

Date Received - Lab Use Only



Lab Sample No.	Client Sample ID	Sample Source/ Description	Canister Number/ Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
	VOCs and TNMOC Test Number: 878	Canister	32249	20/12/23 21/12/23	00:00 00:00	VOC PAMS & TNMOC
	PM10 Test Number: 878	PM10 filter	AT85099	20/12/23 21/12/23	00:00 00:00	FLT Particulate Weight (& metals if over trigger weight)*
	HI-VOL Test Number: 878	HI-VOL Filter	HVF-23-10-04	20/12/23 21/12/23	00:00 00:00	Particulate Weight (& metals if over trigger weight)*
					Total: 24.56 hrs	

Client Authorization: _____

(Signature)

Laboratory Personnel: _____

(Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.



InnoTech
ALBERTA

This cleaned canister meets or exceeds TO-15 Method Specifications

Canister ID: 32249

Proofed by: LSQ on: OCT 18 2023

Evacuated: OCT 23 2023 Recertified: _____

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: Test 878

Sampled By: T Webb

Starting Vacuum:

-27.4 "Hg

End Vacuum:

-4 "Hg/psig

Sample ID: 24010027-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: VOCs and TNMOC Test # 878

TERMS AND CONDITIONS

The attached document entitled "Chain of Custody Form" is subject to the following Terms and Conditions, unless otherwise specified on the Quotation. InnoTech Alberta's commencement of the Services shall be deemed acceptance of the terms and conditions by the Client.

1. Any proposal contained herein is prepared for the consideration of the Client only. Its contents may not be used or disclosed to any other party without prior written consent of the INNOTECH ALBERTA INC. (hereinafter referred to as "InnoTech Alberta").
2. InnoTech Alberta will perform the Services in accordance with normal professional standards.
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5. For the purposes of this Quotation, Intellectual Property means all information, data, artistic and literary works, concepts, designs, processes, software, algorithms and inventions, including, without limitation, those that could be the subject of patent, copyright, industrial design, trade secret or other forms of protection. Intellectual Property which was owned by either InnoTech Alberta or the Client prior to the signing of this Agreement remains the property of that party. Nothing in this Agreement shall operate as a license, permission or grant of any other rights to either InnoTech Alberta's or the Client's Intellectual Property.
6. All data, reports and other information relating to the Services shall be treated by InnoTech Alberta as the confidential property of the Client, and InnoTech Alberta will use reasonable efforts to ensure that its employees, contractors and agents will not disclose the same to any other person, firm or corporation during the term of this Agreement and for a period of five (5) years after the date of termination of the Agreement. The obligation of confidentiality set out herein shall not apply to any information that was in InnoTech Alberta's possession prior to receipt from the Client or which is or becomes part of the public domain through no act or failure on the part of InnoTech Alberta. The obligation of confidentiality set out in this Section shall not prevent the disclosure of information to any level of government having jurisdiction to make lawful demand therefor, or required to be disclosed by any applicable law. Any records required to be maintained by InnoTech Alberta pursuant to this Agreement are subject to the protection and access provisions of the Freedom of Information and Protection of Privacy Act (Alberta).
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Sample ID: 24010027-003 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: H1Vol Test # 878 - Filter # HVF-23-10-04

12. Any test samples or other materials supplied by the Client to InnoTech Alberta may, at InnoTech Alberta's option, be returned by InnoTech Alberta to the Client. The Client shall:
 - (a) be responsible for all costs associated with the handling, transportation and disposal of such materials;
 - (b) reimburse InnoTech Alberta for any costs incurred by InnoTech Alberta associated with the handling, transportation and disposal of such materials; and
 - (c) indemnify and hold InnoTech Alberta harmless from any and all claims, damages or actions associated with the handling, transportation and disposal of such materials.
13. The Client shall pay all invoices rendered by InnoTech Alberta to the Client within thirty (30) days from the date of invoice, without deduction or set-off.
14. If the Client fails to pay any amount under this Agreement, such unpaid amount shall bear interest at a rate per month equal to one (1%) percent (or 12.6825% per annum) with interest on overdue interest at the same rate.
15. InnoTech Alberta makes no representation, warranties or conditions, either expressed or implied, statutory or otherwise and does not warrant the quality, state, merchantability or fitness for any purpose of any goods or products to be delivered pursuant to this Agreement. The Client accepts the results of these Services or items tested as is, and acknowledges that any use or interpretation of the information contained is at the Client's own risk.
16. In no event shall InnoTech Alberta be liable for any indirect or consequential damage or loss suffered by the Client, including loss of anticipated profits.
17. The Client shall indemnify and hold harmless InnoTech Alberta from any and all claims, demands, actions and costs (including legal costs on a solicitor-client basis) that may arise out of:
 - (a) any dangerous defect or content in the item being tested, whether apparent or not, which dangerous defect or content was not disclosed in writing to InnoTech Alberta by the Client at the time the item was submitted for testing;
 - (b) differences between those items actually tested and items previously or subsequently produced which are purported to be identical to the item tested; or
 - (c) any use of the tested item or any item incorporating the tested item, whether by the Client or a third party following its return to the Client.
- The hold harmless shall survive this Agreement.
18. The Client shall, at its own expense and without limiting its liabilities herein, be responsible for insuring its operation in an amount not less than \$2,000,000 inclusive per occurrence, insuring against bodily injury, and property damage including loss of use thereof. Further, the Client is responsible for insuring all owned property directly or indirectly related to this Agreement and InnoTech Alberta shall have no liability for any loss or damage to such property. InnoTech Alberta shall maintain the following insurance: (i) commercial general liability insurance (including cross liability, severability of interests, non-owned automobile liability) in the amount of two million dollars (\$2,000,000.00) per occurrence, and; (ii) professional liability and errors and omissions insurance in the amount of one million dollars (\$1,000,000.00) per claim, and two million dollars (\$2,000,000.00) in the aggregate. In addition, InnoTech Alberta shall maintain all workers' compensation coverage required by applicable laws. Notwithstanding the foregoing, InnoTech Alberta reserves the right to supplement or add insurance coverage from time to time as may be required in its sole discretion. InnoTech Alberta may provide certificates of insurance for coverages outlined in (i) and (ii) above.
20. The Client agrees to comply with all InnoTech Alberta Safety & Security regulations in effect while on InnoTech Alberta premises.
21. This Agreement represents the entire agreement between the parties and shall supersede all prior agreements relative to this transaction.
22. InnoTech Alberta shall not be liable to the Client for any failure or delay in performance of its obligations caused by circumstances beyond its control, including but not limited to acts of God, strikes, laws imposed after the fact, governmental restrictions, riots, wars, civil disorder, rebellion, sabotage, fire, flood, explosion, earthquake or other disasters.
23. InnoTech Alberta may assign this Quotation to an "affiliated" (as that term is defined at Section 2 of the Business Corporations Act (Alberta)) or successor entity on written notice to the Client.
24. This Quotation and rights and parties thereto shall be governed by and construed according to the laws of the Province of Alberta. The parties hereby submit to the jurisdiction of the Courts of Alberta.

CHAIN OF CUSTODY FORM

Environmental Analytical Services
Highway 16A & 75 Street
Vegreville, AB T9C 1T4

Phone: 780-632-8403
Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca



Customer ID: Clean Harbours
Cust Samp ID: VOCs and TNMOC Test # 879

Client Reporting Information

Company: Clean Harbours Canada, Inc
Address: PO Box 390, 50114 Range Road 173,
Ryley, AB T0B 4A0
Contact: Todd Webb or Stan Yuha
Phone: 780-663-2513 or 780-663-3828
Email: Webb.Todd@cleanharbours.com,
Yuha.Stan@cleanharbours.com

Client Billing Information

Contact: Stephanie Dennis
Phone: 780-663-3828
Email: Dennis.Stephanie@cleanharbours.com
Project ID: Test 879
PO #: 0000238012

Turnaround Time

Normal (10 business days)
 Rush
Note: Rush service not available for all tests.
Confirm rush requests with InnoTech Alberta.

Special Instructions/Comments:

*If either PM10 or HI-VOL filter exceeds its trigger weight, then both filters are analyzed for metals
If neither filter exceeds its trigger weight, neither filter is analyzed for metals
If metals analysis is required, please report on the same report as filter weights and VOCs/TNMOC
Trigger Weight for Analysis (PM10): 1.21 mg
Trigger Weight for Analysis (HI-VOL): 91.5 mg

Date Received - Lab Use Only



Lab Sample No.	Client Sample ID	Sample Source/Description	Canister Number/Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
	VOCs and TNMOC Test Number: 879	Canister	29004	26/12/23 27/12/23	00:00 00:00	VOC PAMS & TNMOC
	PM10 Test Number: 879	PM10 filter	AT83614	26/12/23 27/12/23	00:00 00:00	FLT Particulate Weight (& metals if over trigger weight)*
	HI-VOL Test Number: 879	HI-VOL Filter	HVF-23-10-09	26/12/23 27/12/23	00:00 00:00	Particulate Weight (& metals if over trigger weight)*
				Total: 24:37 hrs		

Client Authorization: _____

(Signature)

Laboratory Personnel: _____

(Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.



Canister ID: 29004
 This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: LSQ on: AUG 16 2023

Evacuated: MAY 06 2023 Recertified: _____
 (Use within: 3 months from evacuation or recertification date)
 Laboratory Contact Number: 780-632-8403

Sample ID: <u>Test 879</u>
Sampled By: <u>T. Webb</u>
Starting Vacuum: <u>-27.1</u> "Hg
End Vacuum: <u>-8</u> "Hg/psig

Sample ID: 24010029-001 Priority: Normal



Customer ID: Clean Harbours
 Cust Samp ID: VOCs and TNMOC Test # 879

TERMS AND CONDITIONS

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1. Any proposal contained herein is prepared for the consideration of the Client only. Its contents may not be used or disclosed to any other party without prior written consent of the INNOTECH ALBERTA INC. (hereinafter referred to as "InnoTech Alberta").
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5. For the purposes of this Quotation, Intellectual Property means all information, data, artistic and literary works, concepts, designs, processes, software, algorithms and inventions, including, without limitation, those that could be the subject of patent, copyright, industrial design, trade secret or other forms of protection. Intellectual Property which was owned by either InnoTech Alberta or the Client prior to the signing of this Agreement remains the property of that party. Nothing in this Agreement shall operate as a license, permission or grant of any other rights to either InnoTech Alberta's or the Client's Intellectual Property.
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9. Records, test data, reports and samples, except where shipped to the Client after completion of the Retention and Disposition Schedule.
10. Prices quoted are in Canadian Dollars unless otherwise stated in writing and are exclusive of any provincial, municipal, sales, use or goods and services tax.
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Sample ID: 24010029-003 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: HiVol Test # 879 - Filter # HVF-23-10-09

12. Any test samples or other materials supplied by the Client to InnoTech Alberta may, at InnoTech Alberta's option, be returned by InnoTech Alberta to the Client. The Client shall:

- (a) be responsible for all costs associated with the handling, transportation and disposal of such materials;
- (b) reimburse InnoTech Alberta for any costs incurred by InnoTech Alberta associated with the handling, transportation and disposal of such materials; and
- (c) indemnify and hold InnoTech Alberta harmless from any and all claims, damages or actions associated with the handling, transportation and disposal of such materials.

13. The Client shall pay all invoices rendered by InnoTech Alberta to the Client within thirty (30) days from the date of invoice, without deduction or set-off.

14. If the Client fails to pay any amount under this Agreement, such unpaid amount shall bear interest at a rate per month equal to one (1%) percent (or 12.6825% per annum) with interest on overdue interest at the same rate.

15. InnoTech Alberta makes no representation, warranties or conditions, either expressed or implied, statutory or otherwise and does not warrant the quality, state, merchantability or fitness for any purpose of any goods or products to be delivered pursuant to this Agreement. The Client accepts the results of these Services or items tested as is, and acknowledges that any use or interpretation of the information contained is at the Client's own risk.

16. In no event shall InnoTech Alberta be liable for any indirect or consequential damage or loss suffered by the Client, including loss of anticipated profits.

17. The Client shall indemnify and hold harmless InnoTech Alberta from any and all claims, demands, actions and costs (including legal costs on a solicitor-client basis) that may arise out of:

- (a) any dangerous defect or content in the item being tested, whether apparent or not, which dangerous defect or content was not disclosed in writing to InnoTech Alberta by the Client at the time the item was submitted for testing;
- (b) differences between those items actually tested and items previously or subsequently produced which are purported to be identical to the item tested; or
- (c) any use of the tested item or any item incorporating the tested item, whether by the Client or a third party following its return to the Client.

The hold harmless shall survive this Agreement.

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Appendix E

December Quarterly Audit



Quarterly Audit Partisol FRM Model 2000

Clean Harbors
50114 Range Rd. 173
Ryley, Alberta T0B 4A0
Quarterly Audit Date: December 13, 2023

Clean Harbors

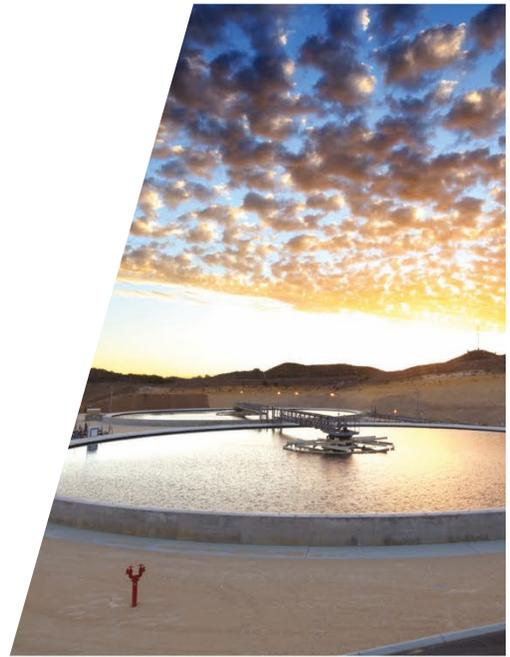




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1. Introduction

GHD Limited (GHD) was retained by Clean Harbors to conduct a Quarterly Audit at 50114 Range Road 173 Ryley, Alberta (Facility) on December 13, 2023. The Quarterly Audit was conducted on the Partisol FRM 2000 Particulate Matter less than 10 microns (PM₁₀) Sampler (Partisol Sampler), located at the Ryley Lift Station, Secondary Road 854, approximately 350 metres southeast of the Facility (53°17'52.66"N and 112°24'57.87"W).

2. Audit Procedure

The Partisol Sampler was audited in accordance with the instrument manual and the Alberta Air Monitoring Directive, 2016 (AMD). Siting location, ambient pressure, ambient temperature, filter temperature, leakage rate and flow rate were audited, as well as overall instrument condition to ensure compliance with the instrument manual and the AMD. Below is a summary of the tasks performed on the Partisol Sampler:

- Siting Location Audit
- Ambient Pressure Audit
- Ambient Temperature Audit
- Filter Temperature Audit
- Leakage Rate Audit
- Flow Rate Audit
- Instrument Condition and Recommendations

GHD verified all of these parameters using calibrated reference instruments. GHD reference instruments either have National Institute of Standards and Technology (NIST) Traceable Certifications, current manufacturer certification, or were verified by a primary standard. The GHD quarterly audit field form can be found in Appendix A. All calibrations and certifications can be found in Appendix B.

3. Audit Results

3.1 Siting Location Audit Results (EPA Station ID 00010348-I-1)

The siting location of the Partisol Sampler meets the requirements of Chapter 3, of the AMD. Table 3.1 of this report compares the AMD Siting Requirements for Intermittent Samplers versus the current Partisol sampler location.

- The current coordinates of the Partisol Sampler are 53°17'52.66"N and 112°24'57.87"W.
- The distance from the nearest roadway is 21 m.



Table 3.1 AMD Requirements vs. Current Partisol Sampler Location

Site Characteristics	AMD Requirements	Current Location	Specification
Sampler Inlet-height above ground (abg)	Minimum 2 m, Maximum 15 m	Meets Requirement	4.63 m abg
Other Requirements	a. Distance from an obstacle greater than 2.5 times the height of the obstacle above the sampler.	Meets Requirement	>2.5 times
	b. At least 2 m from any other samplers or inlets with flow rates greater than 200 litres (L) per minute,	Meets Requirement	None
	Or at least 1 m apart from any other samplers or inlets with flow rates less than or equal of 200 L per minute.	Meets Requirement	None
	c. Unrestricted air flow in three to four wind quadrants.	Meets Requirement	4/4 Unrestricted Quadrants

3.2 Pressure and Temperature Audit Results (EPA Station ID 00010348-I-1)

The pressure and temperature audit results of the Partisol Sampler meet the requirements of Chapter 4, of the AMD. Table 3.2 of this report compares the reference results versus the Partisol Sampler readings.

Table 3.2 Reference Results vs. Partisol Sampler Readings

Parameter	Partisol	Reference	Difference	Limit	Pass/Fail
Ambient Temperature (°C)	3.8	3.49	0.3	±2°C	Pass
Barometric Pressure (mmHg)	695.0	694.1	0.9	±10 mmHg	Pass
Filter Temperature (°C)	4.90	4.73	0.2	±2°C	Pass
Flow (L/min)	16.7	16.7	0.0	±1.0 L/min	Pass

Note: A slight fail was observed based on the flow equation check criteria. However, as shown in Table 3.2, the internal flow check passed during the physical audit. GHD will monitor this closely over the following months and work to resolve this issue for the next audit.

3.3 Leak Check Results (EPA Station ID 00010348-I-1)

3.3.1 Automatic Leak Check

The Partisol firmware performs leak checks in automatic mode and indicates either a "pass" or "fail" based on a pressure drop threshold of 127 mmHg per minute. The Partisol Sampler passed the requirements outlined in the service manual with a pressure drop of 12 mmHg per minute during the audit.



3.3.2 External Manual Leak Check

GHD also performs an external manual leak check on the Partisol Sampler as part of the quarterly audit. The external manual leak check measures the pressure drop on a vacuum gauge located on the sampler. The pressure drop may not exceed more than 8.5 inHg (216 mmHg) over a 30-second span. The Partisol Sampler passed the requirements of the service manual with a pressure drop of 0.5 inHg in a 30-second span.

3.4 Flow Audit (EPA Station ID 00010348-I-1)

The flow audit results of the Partisol Sampler meet the requirements of Chapter 4 of the AMD, refer to Table 3.2.

3.5 Instrument Condition and Recommendations (EPA Station ID 00010348-I-1)

The Partisol Sampler was visually and functionally inspected on the audit day. Audit recommendations and instrument conditions are listed below:

- Liquid crystal display screen is functioning.
- Filter exchange cabinet has been cleaned.
- Ventilation fan filters are clean.
- Filter exchange mechanism is operating normally.
- Filter v-seals are in good condition.
- Ambient temperature and pressure sensor wires in good condition.
- Main power connection wire in good condition.

3.5.1 Recommendations

GHD recommends opening and cleaning PM₁₀ sampling inlet prior to next sampling event.

Appendices

Appendix A

Quarterly Audit Form



GHD Quarterly Audit Form

Date	12/13/2023	Weather Cond.:	Partial Cloud
Owner	Clean Harbors	Start Time:	12:13:00 AM
Station Name	Ryley Lift Station	End Time:	1:07:00 AM
Parameter	PM ₁₀	Performed By:	A. Penny

Partisol FRM Model 2000 Identification		Sampler Data	
Make/Model:	R & P Partisol FRM 2000	Temperature:	3.8
Unit ID:	Ryley Lift Station	Pressure:	695
S/N:	200FB209860905	Flow Set Point:	16.7 L/min

GHD Reference Standards				
	Flow	Pressure	Temperature	Manometer
Make:	AirMetrics	TSI	Fluke	Dwyer
Model:	FRM	9555-X / 960	1551A Ex	475-0-FM
Serial Number:	FRM1218	9555X1002005	3520009	N/A
Calibration Date:	5/17/2016	12/20/2022	7/4/2023	12/1/2022

Audit Data					
	Sampler Data	Reference Data	Difference	Pass/Fail	Units
Ambient Temperature (+/- 2 °C)	3.80	3.49	0.3	Pass	°C
Barometric Pressure (+/- 10 mmHg)	695.00	694.10	0.9	Pass	mmHg
Filter Temperature (+/- 2 °C)	4.90	4.73	0.2	Pass	°C
Flow (+/- 1.0 Litres/min)	16.70	16.70	0.0	Pass	Litres/min

Leak Check					
Manual Check (-8.5 inHg)					
	Initial Pressure	Final Pressure	Pressure Drop	Pass/Fail	Units
	-13.50	-13.00	-0.50	Pass	inHg
Automatic Check (-127 mmHg)					
Leak check was performed in automatic mode, sampler indicated:			12 mmHg/min	Pass	mmHg/min

As Found/As Left	Yes/No	As Found	As Left	Pass/Fail
Did the ambient temperature require adjustment?	No	3.8	3.8	Pass
Did the barometric pressure require adjustment?	No	695	695	Pass
Did the filter temperature require adjustment?	No	4.9	4.9	Pass
Did the flow audit require adjustment?	No	16.7	16.7	Pass

Comments

Flow Equation						
Set Point	Actual Flow (Q _{act})	Absolute Difference	Pass/Fail	Manometer (DH)		
(lpm)	(lpm)	(lpm)	(± 1 lpm)	Actual Temp (T _{act})	2.41 "H ₂ O	3.5°C
16.7	12.4	4.3	Fail	Actual Pres (P _{act})	0.925 bar	
				Actual Pres (P _{act})	27.33 inHg	
FTS Linear Regression Constants						
(m _{flo}) =	0.4452	$Q_{act} = m_{flo} \times \frac{\sqrt{\Delta H \times T_{act}}}{P_{act}} + b_{flo}$				
(b _{flo}) =	0.4430					

Appendix B

Calibration Certificates

Calibration Certificate

Customer: *GHD Ltd.*

Certificate: C593374-00-01

Unit Identification

Manufacturer: **Fluke**
Model: **1551A Ex**
Description: **Stik Thermometer**

Serial: **3520009**
Unit ID: **TIIM-CAL-001**

Calibration Date

Calibration Date: **4-Jul-2023**
Due Date: **4-Jul-2024**

Calibration Conditions

Temperature: **22.8°C**
Humidity: **41.2 %**
Barometric Pressure: **N/A**

General Information

Remark: **N/A**

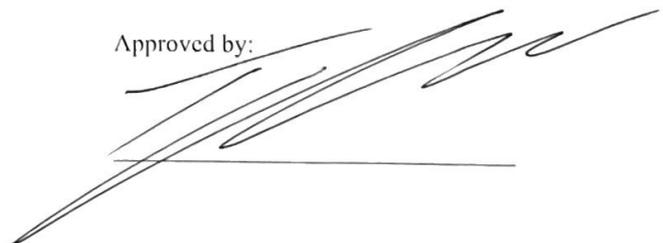
Standards Used

Unit ID	Manufacturer	Model	Cal Date	Due Date
I-1585	Hart Scientific	1521/5627A	20-Apr-2023	20-Apr-2024
I-1969	Ametek	RTC-157A	27-Feb-2023	27-Feb-2024

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of $k = 2$ corresponding to a confidence level of approximately 95%.

Calibrated by: *L. Fuentesbella*

Approved by:

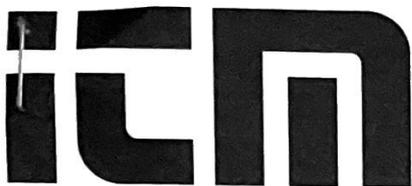



Certificate: C593374-00-01

Asset: ITM0003733

Calibration Certificate

Page 1 of 2



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EDMONTON 9730 32 Avenue NW Edmonton, AB T6N 1L9	CALGARY #209, 4615 112 Ave SE Calgary, AB T2C 5J3	VANCOUVER 1282 Cliveden Av Delta, BC V3M 6G4
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Test Results

Procedure: FLUKE 1551A EX_RTC-157A,Fluke 1523 Rev: 1

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
TEMPERATURE ACCURACY TEST						
-49.9540 °C		-49.982 °C	-50.004 °C	-49.904 °C	Pass	9.0e-003 °C
-24.9510 °C		-24.999 °C	-25.001 °C	-24.901 °C	Pass	9.0e-003 °C
0.0020 °C		-0.022 °C	-0.048 °C	0.052 °C	Pass	9.0e-003 °C
100.0140 °C		99.993 °C	99.964 °C	100.064 °C	Pass	9.0e-003 °C
154.9970 °C		154.986 °C	154.947 °C	155.047 °C	Pass	9.0e-003 °C

Certificate: C593374-00-01

Asset: ITM0003733

Calibration Certificate

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NIST Traceable Transfer Standard Calibration

Calibration Date: 05/17/2016
 Ambient Temp, °K: 295.5
 Amb Press, Atm: 1.0000

Orifice # FRM1218-
 Pri Std # LFE774300
 Manometer # FRM1218

By:
 Chk:

Std ΔH (inH ₂ O)	Manometer ΔH (inH ₂ O)	Actual Flow (alpm)	Calc Flow (alpm)	Difference* (%diff)
6.67	6.67	20.179	20.209	-0.15
5.86	5.86	18.988	18.970	0.09
5.10	5.10	17.733	17.727	0.03
4.39	4.39	16.490	16.479	0.07
3.73	3.73	15.233	15.224	0.06
3.12	3.12	13.964	13.962	0.02
2.56	2.56	12.683	12.688	-0.04
2.05	2.05	11.390	11.401	-0.10

**Manometer ΔH vs Act Flow
 Linear Regression Results:**
 m_{flo} = 0.4452
 b_{flo} = 0.4430
 r² = 1.0000

* all points must be within ± 2%

The MiniFlo calibration is performed with an NIST-traceable standard. Each unit has a unique pair of calibration constants derived from the calibration which are used to calculate the actual air flow rate at all ambient conditions. The unit's calibration should be recertified annually.

The actual flow rate is a function of the pressure drop across the device, the ambient temperature, and the ambient pressure. The relationship of these variables and the unique calibration constants ("m" and "b") for each device is presented in the following equation (Eq.A):

$$Q_{act} = m_{flo} \times \sqrt{\frac{\Delta H \times T_{act}}{P_{act}}} + b_{flo}$$

Q_{act} = actual flowrate, liters per min
 ΔH = manometer reading, inches of water
 T_{act} = ambient temperature, °K
 P_{act} = ambient pressure, atmospheres

CAUTION: The weather service, most airports, etc, reduce the atmospheric pressure to a common reference (sea level). The equation above requires the atmospheric pressure at the location where the MiniFlo is being used.

The equation below may be used to estimate the ambient atmospheric pressure at any elevation if the sea level pressure is known.

$$P_{act} = P_{sea} \times \left(1 - \frac{E}{145300} \right)^{5.25}$$

P_{act} = Ambient Atmospheric Pressure
 P_{sea} = Sea Level Atmospheric Pressure
 E = Site elevation, feet

Airmetrics

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Calibration Certificate

Customer: *GHD Ltd.*

Certificate: C542161-00-01

Unit Identification

Manufacturer: **Dwyer**
Model: **475-0-FM**
Description: **Digital Manometer**

Serial: *N/A*
Unit ID: **MAN-CAL-001**

Calibration Date

Calibration Date: **1-Dec-2022**
Due Date: **1-Dec-2023**

Calibration Conditions

Temperature: **21.7°C**
Humidity: **15 %**
Barometric Pressure: *N/A*

General Information

Remark: *N/A*

Standards Used

<u>Unit ID</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Cal Date</u>	<u>Due Date</u>
CAL0224	Fluke	750P01	12-Sep-2022	12-Mar-2023

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of k=2 corresponding to a confidence level of approximately 95%.

Calibrated by: *D. Gano*

Approved by:

Certificate: C542161-00-01
Asset: ITM0017905

Calibration Certificate

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Test Results

Procedure: Pressure Gauge 10.00 IN.W.C 0.5% FS /750P01 Rev: 1.1

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
Tolerance used (additive if more than one listed): 0.5% of full scale						
UUT is set to the nominal value, Reading is the actual pressure read by the system instrument.						
1.000 inH2O		1.003 inH2O	0.950 inH2O	1.050 inH2O	Pass	1.6e-002 inH2O
2.000 inH2O		1.983 inH2O	1.950 inH2O	2.050 inH2O	Pass	1.6e-002 inH2O
4.000 inH2O		3.982 inH2O	3.950 inH2O	4.050 inH2O	Pass	1.6e-002 inH2O
6.000 inH2O		5.978 inH2O	5.950 inH2O	6.050 inH2O	Pass	1.6e-002 inH2O
8.000 inH2O		7.969 inH2O	7.950 inH2O	8.050 inH2O	Pass	1.6e-002 inH2O
10.000 inH2O		9.974 inH2O	9.950 inH2O	10.050 inH2O	Pass	1.6e-002 inH2O



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Calibration Certificate

Customer: GHD LTD

Certificate: C542157-00-01

Unit Identification

Manufacturer: TSI
Model: 9555-X / 960
Description: VelociCalc

Serial: 9555X1002005
Unit ID: VEL-CAL-002

Calibration Date

Calibration Date: 20-Dec-2022
Due Date: 20-Dec-2023

Calibration Conditions

Temperature: 22.5°C
Humidity: 34.8 %
Barometric Pressure: 103.0kPa

General Information

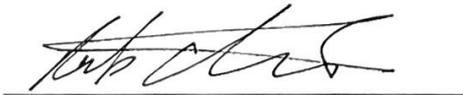
Remark:N/A

Standards Used

<u>Unit ID</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Cal Date</u>	<u>Due Date</u>
M-012	Airflow Development	83FSL	***** No Calibration Required *****	
M-110	Love Controls	HM3531DLF600	11-Oct-2022	11-Oct-2023
M-115	Rotronic	M22W	10-Jul-2022	10-Jul-2023
M-130	Fluke	1552A	13-May-2022	13-May-2023

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of k=2 corresponding to a confidence level of approximately 95%.

Calibrated by: *R. Chaaya*



Approved by:



Certificate: C542157-00-01
Asset: ITM0071374

Calibration Certificate

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Test Results

Procedure: TSI 9555-P C/W 964 Probe Rev: 2

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
TEMPERATURE TEST ACCURACY °C						
0.0 °C		0.1 °C	-0.3 °C	0.3 °C	Pass	1.2e-001 °C
25.0 °C		24.9 °C	24.7 °C	25.3 °C	Pass	1.2e-001 °C
60.0 °C		60.0 °C	59.7 °C	60.3 °C	Pass	1.2e-001 °C
VELOCITY TEST ACCURACY ft/min						
100 ft/min		99 ft/min	97 ft/min	103 ft/min	Pass	5.8e-001 t/min
200 ft/min		201 ft/min	194 ft/min	206 ft/min	Pass	5.8e-001 t/min
300 ft/min		303 ft/min	291 ft/min	309 ft/min	Pass	5.8e-001 t/min
400 ft/min		402 ft/min	388 ft/min	412 ft/min	Pass	5.8e-001 t/min
500 ft/min		496 ft/min	485 ft/min	515 ft/min	Pass	5.8e-001 t/min
750 ft/min		754 ft/min	727 ft/min	773 ft/min	Pass	5.8e-001 t/min
1000 ft/min		993 ft/min	970 ft/min	1030 ft/min	Pass	5.8e-001 t/min
1500 ft/min		1507 ft/min	1455 ft/min	1545 ft/min	Pass	5.8e-001 t/min
2000 ft/min		2018 ft/min	1939 ft/min	2061 ft/min	Pass	5.8e-001 t/min
3000 ft/min		3005 ft/min	2910 ft/min	3090 ft/min	Pass	5.8e-001 t/min
4000 ft/min		3986 ft/min	3880 ft/min	4120 ft/min	Pass	5.8e-001 t/min
5000 ft/min		5011 ft/min	4850 ft/min	5150 ft/min	Pass	5.8e-001 t/min

Certificate: C542157-00-01

Asset: ITM0071374

Calibration Certificate

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about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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Quarterly Total Suspended Particulate (TSP) High Volume Sampler Calibration

Clean Harbors
50114 Range RD. 173
Ryley, Alberta T0B 4A0
Quarterly Audit Date: December 13, 2023

Clean Harbors

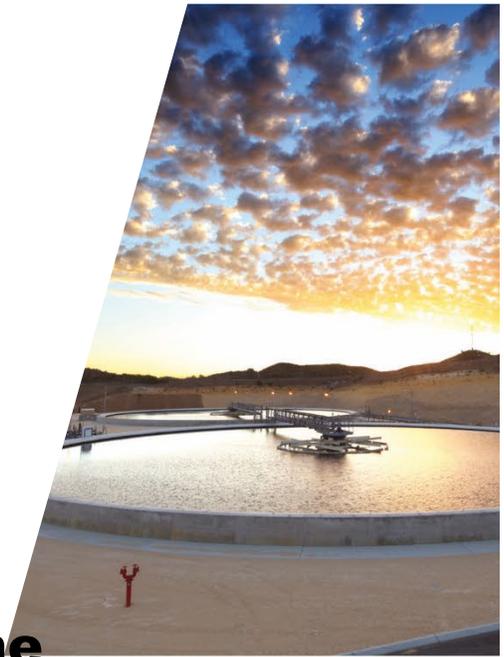




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Appendix Index

Appendix A	Quarterly Audit Form
Appendix B	Calibration Certificate



1. Introduction

GHD Limited (GHD) was retained by Clean Harbors to conduct a Quarterly Total Suspended Particulate (TSP) High Volume Calibration Audit at 50114 Range Road 173 Ryley, Alberta (Facility), 5211 - 52 Ave, Ryley, Alberta (School), and Secondary Road 854, approximately 350 metres southeast of the Facility (Lift Station) on December 13, 2023. The Quarterly Audit was conducted on three Tisch TSP High Volume Samplers (Hi-Vol Samplers). The Facility Site Station (EPA Station ID 00010348-I-2) Sampler is located against the Facility perimeter fence, north of the vehicle staging road (53°18'13.11"N and 112°25'5.81"W). The Ryley School Station (EPA Station ID 00010348-I-3) Sampler is located on the roof of the Ryley School (53°17'28.99"N and 112°25'55.81"W). The Highway 854 Lift Station (EPA Station ID 00010348-I-1) Sampler is located at the Ryley Lift Station, Secondary Road 854, approximately 350 metres southeast of the Facility (53°17'52.66"N and 112°24'57.87"W).

2. Audit Procedure

The TSP Samplers were audited in accordance with the instrument manual, the Clean Harbors Ryley Enhanced Ambient Air Quality Monitoring Program (AQMP) and the Alberta Air Monitoring Directive, 2016 (AMD). The AQMP requires that the calibration of equipment be completed on a quarterly basis. GHD performed a siting location audit, leak audit, 5-point flow calibration audit and evaluation of instrumentation and provided recommendations.

Below is a summary of the tasks performed on each Sampler:

- Siting Location Audit
- Leak Audit
- 5-Point Flow Rate Audit
- Instrument Condition and Recommendations

GHD verified all of these parameters using calibrated reference instruments. GHD reference instruments either have National Institute of Standards and Technology (NIST) Traceable Certifications, current manufacturer certification, or were verified by a primary standard. The GHD quarterly audit field forms can be found in Appendix A. All calibrations and certifications can be found in Appendix B.

3. Audit Results

3.1 Siting Location Audit Results

The siting locations of the Hi-Vol Samplers meet the requirements of Chapter 3, Page 8, Table 5 of the AMD. Table 3.1 of this report compares the AMD Siting Requirements for Intermittent Samplers versus the Sampler locations.



Facility Site Station

- The current coordinates of the Facility Sampler is 53°18'13.11"N and 112°25'5.81"W.
- The distance from the nearest roadway is ~10 metres (m).

Ryley School Station

- The current coordinates of the School Sampler are 53°17'28.99"N and 112°25'55.81"W.
- The distance from the nearest roadway is ~5 m.

Highway 854 Lift Station

- The current coordinates of the List Station Sampler are 53°17'52.66"N and 112°24'57.87"W.
- The distance from the nearest roadway is ~5 m.

Table 3.1 AMD Requirements vs. Facility Site Station Location

Site Characteristics	AMD Requirements	Current Location	Specification
Sampler Inlet-height above ground (abg)	Minimum 2 m, Maximum 15 m	Meets Requirement	4 m abg
Other Requirements	a. Distance from an obstacle greater than 2.5 times the height of the obstacle above the sampler.	Meets Requirement	>2.5 times
	b. At least 2 m from any other samplers or inlets with flow rates greater than 200 litres (L) per minute.	Meets Requirement	None
	or at least 1 m apart from any other samplers or inlets with flow rates less than or equal of 200 L per minute	Meets Requirement	None
	c. Unrestricted air flow in three to four wind quadrants.	Meets Requirement	Three to four Unrestricted Quadrants

Table 3.2 AMD Requirements vs. Ryley School Station Location

Site Characteristics	AMD Requirements	Current Location	Specification
Sampler Inlet-height above ground (abg)	Minimum 2 m, Maximum 15 m	Meets Requirement	4 m abg
Other Requirements	a. Distance from an obstacle greater than 2.5 times the height of the obstacle above the sampler.	Meets Requirement	>2.5 times
	b. At least 2 m from any other samplers or inlets with flow rates greater than 200 litres (L) per minute.	Meets Requirement	None
	or at least 1 m apart from any other samplers or inlets	Meets Requirement	None



Table 3.2 AMD Requirements vs. Ryley School Station Location

Site Characteristics	AMD Requirements	Current Location	Specification
	with flow rates less than or equal of 200 L per minute		
	c. Unrestricted air flow in three to four wind quadrants.	Meets Requirement	4/4 Unrestricted Quadrants

Table 3.3 AMD Requirements vs. Highway 854 Lift Station Location

Site Characteristics	AMD Requirements	Current Location	Specification
Sampler Inlet-height above ground (abg)	Minimum 2 m, Maximum 15 m	Meets Requirement	4 m abg
Other Requirements	a. Distance from an obstacle greater than 2.5 times the height of the obstacle above the sampler.	Meets Requirement	>2.5 times
	b. At least 2 m from any other samplers or inlets with flow rates greater than 200 litres (L) per minute.	Meets Requirement	None
	or at least 1 m apart from any other samplers or inlets with flow rates less than or equal of 200 L per minute	Meets Requirement	None
	c. Unrestricted air flow in three to four wind quadrants.	Meets Requirement	4/4 Unrestricted Quadrants

3.2 Leak Check Procedure

GHD performed a leak rate pre-inspection of each Sampler by making sure all gaskets were in place and in good condition, all connections are secure and not over tightened and inspected for damaged components. The leak rate audit was conducted by installing the calibrator orifice plate and warming up the sampler to normal operating temperature. The orifice plate holes and pressure tap holes were then covered for 30 seconds. Leakage was determined by listening for a "high-pitched squealing" sound made by escaping air.

3.2.1 Leak Check Results

Facility Site Station

The Facility Site Station Sampler passed the requirements of manufacturer's requirement for Leak Rate Audit.

Ryley School Station

The Ryley School Station Sampler passed the requirements of manufacturer's requirement for Leak Rate Audit.



Highway 854 Lift Station

The Lift Station Sampler passed the requirements of manufacturer's requirement for Leak Rate Audit.

3.3 Flow Audit Results

The 5-point flow audit was completed in accordance with the AQMP, the AMD and procedures outlined in the manufacturer's manual. The Facility Sampler, School Sampler, and Lift Station Sampler field audit forms are provided in Appendix A.

Facility Site Station

The Facility Site Station Sampler passed the 10 percent tolerance at 40 cubic feet per minute (CFM) as specified in the AQMP.

Ryley School Station

The Ryley School Station Sampler passed the 10 percent tolerance at 40 cubic feet per minute (CFM) as specified in the AQMP.

Highway 854 Lift Station

The Lift Station Sampler passed the 10 percent tolerance at 40 cubic feet per minute (CFM) as specified in the AQMP.

3.4 Instrument Condition and Recommendations

The Facility Site Sampler, Ryley School Sampler, and Lift Station Sampler were visually and functionally inspected on the audit day. Audit recommendations are listed below:

- The high volume motors were inspected at all locations, they were in good working condition when GHD arrived on site.
- Sample filter pans were cleaned.
- Pressure tap tubing in fair condition.
- All seals, gaskets and fittings are in good condition (no action required).
- Filter holder and screen in good condition (no action required).
- Main power connection wire in good condition (no action required).



All of Which is Respectfully Submitted,

GHD

A handwritten signature in black ink, appearing to read 'Pooya Shariaty', written over a faint circular stamp.

Pooya Shariaty, Ph.D, P.Eng.

Appendices

Appendix A

Quarterly Audit Forms



Site and Calibration Information

Site		Calibration Orifice	
Location:	Facility Sampler	Make:	Tisch Environmental
Date:	Dec 13, 2023	Model:	TE-5028A
Tech.:	A. Penny	Serial:	1203
Sampler:	TE-5170V	Qa Slope (m):	0.97323
Serial #:	P8580 TSP VFC	Qa Int (b):	-0.01459
VFC G-Factor:	0.0909523500	Calibration due date:	02/20/24

Ambient Conditions

Temp (deg F):	34.90	Barometric Press (in Hg):	27.31
Ta (deg K):	275	Pa (mm Hg):	693.7
Ta (deg C):	1.6		

Calibration Information

Run Number	Orifice "H2O	Qa m3/min	Sampler "H2O	Pf mm Hg	Po/Pa	Calculated m3/min	% of Diff
1	3.41	1.209	5.99	11.179	0.984	1.242	2.81
2	3.32	1.193	6.36	11.870	0.983	1.241	4.02
3	3.28	1.186	7.68	14.333	0.979	1.236	4.30
4	3.23	1.177	8.77	16.367	0.976	1.233	4.76
5	3.20	1.171	10.46	19.521	0.972	1.227	4.69

Calculate Total Air Volume Using G-Factor

Enter Average Temperature During Sampling Duration (Deg F)	34.90
Average Temperature During Sampling Duration (Deg K)	274.61
Enter Average Barometric Pressure During Sampling Duration (In Hg)	27.31
Average Barometric Pressure During Sampling (mm Hg)	693.67
Enter Clean Filter Sampler Inches of Water	3.41
Enter Dirty Filter Sampler Inches of Water	3.20
Average Filter Sampler (mm Hg)	6.17
Enter Total Runtime in Hours (xx.xx)	0.25
	Po/Pa : 0.991
	Calculated Flow Rate (m3/min): 1.252
	Total Flow (m3): 18.78

Calculations

$$\text{Calibrator Flow (Qa)} = 1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$$

$$\text{Pressure Ratio (Po/Pa)} = 1 - \text{Pf}/\text{Pa}$$

$$\% \text{ Difference} = (\text{Look Up Flow} - \text{Calibrator Flow}) / \text{Calibrator Flow} * 100$$

NOTE: Ensure calibration orifice has been certified within 12 months of use



Site and Calibration Information

<u>Site</u>		<u>Calibration Orifice</u>	
Location:	Ryley School Sampler	Make:	Tisch Environmental
Date:	Dec 13, 2023	Model:	TE-5028A
Tech.:	A. Penny	Serial:	1203
Sampler:	TE-5170V	Qa Slope (m):	0.97323
Serial #:	P8581 TSP VFC	Qa Int (b):	-0.01459
VFC G-Factor:	0.0906771980	Calibration due date:	02/20/24

Ambient Conditions

Temp (deg F):	34.0	Barometric Press (in Hg):	27.34
Ta (deg K):	274	Pa (mm Hg):	694.4
Ta (deg C):	1.1		

Calibration Information

<u>Run Number</u>	<u>Orifice "H2O</u>	<u>Qa m3/min</u>	<u>Sampler "H2O</u>	<u>Pf mm Hg</u>	<u>Po/Pa</u>	<u>Calculated m3/min</u>	<u>% of Diff</u>
1	3.41	1.207	5.86	10.936	0.984	1.242	2.90
2	3.36	1.198	6.64	12.392	0.982	1.239	3.42
3	3.27	1.182	7.67	14.314	0.979	1.235	4.48
4	3.23	1.175	8.78	16.386	0.976	1.231	4.77
5	3.16	1.163	10.25	19.129	0.972	1.226	5.42

Calculate Total Air Volume Using G-Factor

Enter Average Temperature During Sampling Duration (Deg F)	34.00
Average Temperature During Sampling Duration (Deg K)	274.11
Enter Average Barometric Pressure During Sampling Duration (In Hg)	27.34
Average Barometric Pressure During Sampling (mm Hg)	694.44
Enter Clean Filter Sampler Inches of Water	3.41
Enter Dirty Filter Sampler Inches of Water	3.16
Average Filter Sampler (mm Hg)	6.13
Enter Total Runtime in Hours (xx.xx)	0.25
	Po/Pa : 0.991
	Calculated Flow Rate (m3/min): 1.251
	Total Flow (m3): 18.76

Calculations

Calibrator Flow (Qa) = 1/Slope*(SQRT(H2O*(Ta/Pa))-Intercept)
 Pressure Ratio (Po/Pa) = 1-Pf/Pa
 % Difference = (Look Up Flow-Calibrator Flow)/Calibrator Flow*100

NOTE: Ensure calibration orifice has been certified within 12 months of use



Site and Calibration Information

Site		Calibration Orifice	
Location:	Lift Station Sampler	Make:	Tisch Environmental
Date:	Dec 13, 2023	Model:	TE-5028A
Tech.:	A. Penny	Serial:	1203
Sampler:	TE-5170V	Qa Slope (m):	0.97323
Serial #:	P11162 TSP VFC	Qa Int (b):	-0.01459
VFC G-Factor:	0.0864333900	Calibration due date:	02/20/24

Ambient Conditions

Temp (deg F):	38.59	Barometric Press (in Hg):	27.34
Ta (deg K):	277	Pa (mm Hg):	694.4
Ta (deg C):	3.7		

Calibration Information

Run Number	Orifice "H2O"	Qa m3/min	Sampler "H2O"	Pf mm Hg	Po/Pa	Calculated m3/min	% of Diff
1	3.33	1.198	5.68	10.600	0.985	1.243	3.67
2	3.26	1.186	6.36	11.870	0.983	1.240	4.55
3	3.19	1.173	7.67	14.314	0.979	1.235	5.28
4	3.12	1.161	8.68	16.199	0.977	1.232	6.12
5	3.07	1.151	10.30	19.223	0.972	1.226	6.51

Calculate Total Air Volume Using G-Factor

Enter Average Temperature During Sampling Duration (Deg F)	38.59
Average Temperature During Sampling Duration (Deg K)	276.66
Enter Average Barometric Pressure During Sampling Duration (In Hg)	27.34
Average Barometric Pressure During Sampling (mm Hg)	694.44
Enter Clean Filter Sampler Inches of Water	3.33
Enter Dirty Filter Sampler Inches of Water	3.07
Average Filter Sampler (mm Hg)	5.97
Enter Total Runtime in Hours (xx.xx)	0.22
	Po/Pa : 0.991
	Calculated Flow Rate (m3/min): 1.251
	Total Flow (m3): 16.52

Calculations

$$\text{Calibrator Flow (Qa)} = 1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa}))) - \text{Intercept}$$

$$\text{Pressure Ratio (Po/Pa)} = 1 - \text{Pf}/\text{Pa}$$

$$\% \text{ Difference} = (\text{Look Up Flow} - \text{Calibrator Flow}) / \text{Calibrator Flow} * 100$$

NOTE: Ensure calibration orifice has been certified within 12 months of use

Appendix B

Calibration Certificates

Calibration Certificate

Customer: *GHD Ltd.*

Certificate: C593374-00-01

Unit Identification

Manufacturer: **Fluke**
Model: **1551A Ex**
Description: **Stik Thermometer**

Serial: **3520009**
Unit ID: **TIIM-CAL-001**

Calibration Date

Calibration Date: **4-Jul-2023**
Due Date: **4-Jul-2024**

Calibration Conditions

Temperature: **22.8°C**
Humidity: **41.2 %**
Barometric Pressure: **N/A**

General Information

Remark: **N/A**

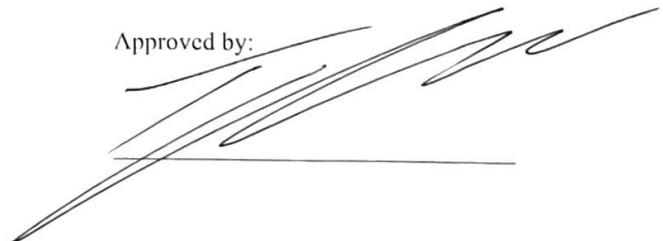
Standards Used

Unit ID	Manufacturer	Model	Cal Date	Due Date
I-1585	Hart Scientific	1521/5627A	20-Apr-2023	20-Apr-2024
I-1969	Ametek	RTC-157A	27-Feb-2023	27-Feb-2024

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of $k = 2$ corresponding to a confidence level of approximately 95%.

Calibrated by: *L. Fuentesbella*

Approved by:

Certificate: C593374-00-01

Asset: ITM0003733

Calibration Certificate

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Test Results

Procedure: FLUKE 1551A EX_RTC-157A,Fluke 1523 Rev: 1

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
TEMPERATURE ACCURACY TEST						
-49.9540 °C		-49.982 °C	-50.004 °C	-49.904 °C	Pass	9.0e-003 °C
-24.9510 °C		-24.999 °C	-25.001 °C	-24.901 °C	Pass	9.0e-003 °C
0.0020 °C		-0.022 °C	-0.048 °C	0.052 °C	Pass	9.0e-003 °C
100.0140 °C		99.993 °C	99.964 °C	100.064 °C	Pass	9.0e-003 °C
154.9970 °C		154.986 °C	154.947 °C	155.047 °C	Pass	9.0e-003 °C

Certificate: C593374-00-01

Asset: IIM0003733

Calibration Certificate

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Certificate of Calibration

Calibration Certification Information			
Cal. Date: February 20, 2023	Rootsmeter S/N: 438320	Ta: 294	°K
Operator: Jim Tisch		Pa: 741.17	mm Hg
Calibration Model #: TE-5028A	Calibrator S/N: 1203		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.2300	4.3	1.50
2	3	4	1	0.9590	7.1	2.50
3	5	6	1	0.8670	8.5	3.00
4	7	8	1	0.8040	9.9	3.50
5	9	10	1	0.6110	17.0	6.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
0.9828	0.7990	1.2177	0.9942	0.8083	0.7714
0.9790	1.0209	1.5720	0.9904	1.0328	0.9958
0.9772	1.1271	1.7221	0.9885	1.1402	1.0909
0.9753	1.2130	1.8600	0.9866	1.2272	1.1783
0.9658	1.5807	2.4354	0.9771	1.5991	1.5427
QSTD	m=	1.55422	QA	m=	0.97323
	b=	-0.02303		b=	-0.01459
	r=	0.99992		r=	0.99992

Calculations	
Vstd= $\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va= $\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
Qstd= $Vstd / \Delta Time$	Qa= $Va / \Delta Time$
For subsequent flow rate calculations:	
Qstd= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30.



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Calibration Certificate

Customer: *GHD Ltd.*

Certificate: C542161-00-01

Unit Identification

Manufacturer: **Dwyer**
Model: **475-0-FM**
Description: **Digital Manometer**

Serial: *N/A*
Unit ID: **MAN-CAL-001**

Calibration Date

Calibration Date: **1-Dec-2022**
Due Date: **1-Dec-2023**

Calibration Conditions

Temperature: **21.7°C**
Humidity: **15 %**
Barometric Pressure: *N/A*

General Information

Remark: *N/A*

Standards Used

<u>Unit ID</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Cal Date</u>	<u>Due Date</u>
CAL0224	Fluke	750P01	12-Sep-2022	12-Mar-2023

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of k=2 corresponding to a confidence level of approximately 95%.

Calibrated by: *D. Gano*

Approved by:

Certificate: C542161-00-01
Asset: ITM0017905

Calibration Certificate

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Test Results

Procedure: Pressure Gauge 10.00 IN.W.C 0.5% FS /750P01 Rev: 1.1

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
Tolerance used (additive if more than one listed): 0.5% of full scale						
UUT is set to the nominal value, Reading is the actual pressure read by the system instrument.						
1.000 inH2O		1.003 inH2O	0.950 inH2O	1.050 inH2O	Pass	1.6e-002 inH2O
2.000 inH2O		1.983 inH2O	1.950 inH2O	2.050 inH2O	Pass	1.6e-002 inH2O
4.000 inH2O		3.982 inH2O	3.950 inH2O	4.050 inH2O	Pass	1.6e-002 inH2O
6.000 inH2O		5.978 inH2O	5.950 inH2O	6.050 inH2O	Pass	1.6e-002 inH2O
8.000 inH2O		7.969 inH2O	7.950 inH2O	8.050 inH2O	Pass	1.6e-002 inH2O
10.000 inH2O		9.974 inH2O	9.950 inH2O	10.050 inH2O	Pass	1.6e-002 inH2O



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Calibration Certificate

Customer: GHD LTD

Certificate: C542157-00-01

Unit Identification

Manufacturer: TSI
Model: 9555-X / 960
Description: VelociCalc

Serial: 9555X1002005
Unit ID: VEL-CAL-002

Calibration Date

Calibration Date: 20-Dec-2022
Due Date: 20-Dec-2023

Calibration Conditions

Temperature: 22.5°C
Humidity: 34.8 %
Barometric Pressure: 103.0kPa

General Information

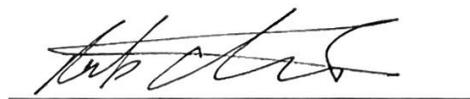
Remark:N/A

Standards Used

<u>Unit ID</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Cal Date</u>	<u>Due Date</u>
M-012	Airflow Development	83FSL	***** No Calibration Required *****	
M-110	Love Controls	HM3531DLF600	11-Oct-2022	11-Oct-2023
M-115	Rotronic	M22W	10-Jul-2022	10-Jul-2023
M-130	Fluke	1552A	13-May-2022	13-May-2023

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of k=2 corresponding to a confidence level of approximately 95%.

Calibrated by: *R. Chaaya*



Approved by:



Certificate: C542157-00-01
Asset: ITM0071374

Calibration Certificate

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Test Results

Procedure: TSI 9555-P C/W 964 Probe Rev: 2

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
TEMPERATURE TEST ACCURACY °C						
0.0 °C		0.1 °C	-0.3 °C	0.3 °C	Pass	1.2e-001 °C
25.0 °C		24.9 °C	24.7 °C	25.3 °C	Pass	1.2e-001 °C
60.0 °C		60.0 °C	59.7 °C	60.3 °C	Pass	1.2e-001 °C
VELOCITY TEST ACCURACY ft/min						
100 ft/min		99 ft/min	97 ft/min	103 ft/min	Pass	5.8e-001 t/min
200 ft/min		201 ft/min	194 ft/min	206 ft/min	Pass	5.8e-001 t/min
300 ft/min		303 ft/min	291 ft/min	309 ft/min	Pass	5.8e-001 t/min
400 ft/min		402 ft/min	388 ft/min	412 ft/min	Pass	5.8e-001 t/min
500 ft/min		496 ft/min	485 ft/min	515 ft/min	Pass	5.8e-001 t/min
750 ft/min		754 ft/min	727 ft/min	773 ft/min	Pass	5.8e-001 t/min
1000 ft/min		993 ft/min	970 ft/min	1030 ft/min	Pass	5.8e-001 t/min
1500 ft/min		1507 ft/min	1455 ft/min	1545 ft/min	Pass	5.8e-001 t/min
2000 ft/min		2018 ft/min	1939 ft/min	2061 ft/min	Pass	5.8e-001 t/min
3000 ft/min		3005 ft/min	2910 ft/min	3090 ft/min	Pass	5.8e-001 t/min
4000 ft/min		3986 ft/min	3880 ft/min	4120 ft/min	Pass	5.8e-001 t/min
5000 ft/min		5011 ft/min	4850 ft/min	5150 ft/min	Pass	5.8e-001 t/min

Certificate: C542157-00-01

Asset: ITM0071374

Calibration Certificate

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about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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