Yakima Limited Purpose Landfill
Landfill Gas Investigation

Prepared for

August 2022

Prepared by

Parametrix

Yakima Limited Purpose Landfill
Landfill Gas Investigation

Prepared for

DTG Recycle
41 Rocky Top Road
Yakima, WA 98908

Prepared by

Parametrix
719 2nd Avenue, Suite 200
Seattle, WA 98104
T. 206.394.3700 F. 1.855.542.6353
www.parametrix.com

August 2022 | 553-8472-002

CITATION

Parametrix, 2022. Yakima Limited Purpose Landfill Gas Investigation. Prepared by Parametrix, Seattle, Washington. August 2022.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
APH	air-phase petroleum hydrocarbons
DTG	DTG Enterprises, Inc.
Ecology	Washington State Department of Ecology
FEMA	Federal Emergency Management Agency
Freestone	Freestone Environmental Services
GEM	Landtec GEM 5000
HAZWOPER	Hazardous Waste Operations and Emergency Response
LEL	lower explosive limit
LFG	Landfill gas
LPL	Limited purpose landfill
MPE	Yakima Health District
MTCA	Model Toxics Control Act
PCS	petroleum contaminated soils
ppm	Parts per million
TO	Toxics organics
VOC	Volatile organic compound
WAC	Washington Administrative Code
YRCAA	Yakima Regional Clean Air Agency

1. INTRODUCTION

DTG Recycle (DTG) operates the Yakima Limited Purpose Landfill (LPL)) located at 41 Rocky Top Road in Yakima, Washington (Figure 1). The LPL is within Section 10 of Township 13 North Range 17 East on Yakima County Parcel Numbers 17131023003 and 17131031003. The LPL was previously operated as the Anderson Rock and Demolition Pit and the LPL was purchased by DTG in October 2019.

1.1 Background

DTG is currently operating the LPL and undergoing regulatory review with the Yakima Health District (YHD), Yakima Regional Clean Air Agency (YRCAA), and the Washington State Department of Ecology (Ecology)) in accordance with Chapter 173-350-400 Washington Administrative Code (WAC)). During the review, YHD, YRCAA, and Ecology became aware of a landfill gas (LFG)) issue related with an open fissure (vents) on the northwest slope of the LPL.

In December 2021, Freestone Environmental Services (Freestone, 2022) completed air sampling from the vents with a hand pump and tedlar bag. Three samples were collected (A-1, A-2, and A-3) and submitted for laboratory analysis of volatile organic compounds (VOCs) using EPA compendium method Toxics Organics (TO)-15. 26 VOCs were identified including 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; 1,4-dioxane; 2-butanone; 2-hexanone; 2-propanol; 4-ethyltoluene; 4-methyl-2-pentanone; acetone; benzene; carbon disulfide; chlorobenzene; chloroethane; chloromethane; cyclohexane; ethanol; ethylbenzene; heptane; hexane; m & p xylenes; methanol; o-xylenes; propene; styrene; tetrahydrofuran; and toluene. Concentrations were found highest at sample A-1. Temperatures were measured at A-1 up to 145 degrees Fahrenheit within the subsurface.

In January 2022, Freestone completed additional sampling with summa canisters collecting ambient air samples and samples near the fissures. A total of 8 samples (S1 through S8) were collected and submitted for analysis of VOCs. Samples S-1, S-2, and S-3 were completed near an open fissure. Samples S-4 through S-8 were upwind and landfill boundary ambient samples. Ten VOCs were detected in the S-1 through S-3 samples including acetone; benzene; chloromethane; ethanol; ethylbenzene; heptane; hexane; m & p xylenes; methanol; propene; and toluene. Concentrations of VOCs were much lower than the December soil gas samples. Upwind and ambient air samples (S-4 through S-8) were non-detects for all compounds except for acetone in sample S-6, methanol in sample S-7, 2-methylbutane in S-5, and propane in S-6. These results showed no exceedances of Model Toxics Control Act (MTCA) Method B or C air cleanup levels at the landfill boundary. For landfills, air emissions generally apply at the facility boundary.

Use of the MTCA Method B cleanup and screening levels is predominantly for screening purposes based upon the initial results of the investigation. Cancer cleanup levels are based upon a 70 kg person being exposed daily continuously for a period of 30 years and one person out of one million people would develop cancer (WAC 173-340-750). Non-cancer cleanup levels are similarly based upon a 70 kg person being exposed continuously for a period of 6 years and one person out of one hundred thousand would develop non-cancerous conditions (i.e. target organ conditions based upon the chemical). Neither case is relevant to the landfill facility; however, calculation of site-specific screening or cleanup levels was not part of or in the scope of this study.

1.2 Objective

The previous Freestone investigations largely focused on LFG related to the open fissure area and potential emissions. YHD, YRCAA, and Ecology requested DTG complete an investigation across the LPL fill area to verify that the emissions are not a site-wide issue and determine if there is an underground fire that could be creating or related to the emissions.

A work plan was developed and approved by YHD, YRCAA, and Ecology for completion of this investigation (Parametrix, 2022). The plan was to install temporary soil gas probes 3 feet into the landfill material, collect eight samples of gas across the fill area, and analyze the samples for: VOCs using EPA Method TO-15; air-phase petroleum hydrocarbons (APH) by MA-APH; and for major gases using EPA Method 3C. Additionally, ambient air samples would also be collected at four locations and analyzed for VOCs and major gases. The gas samples from the landfill subsurface would also be measured for major gases with a Landtec GEM 5000 LFG meter (GEM).

2. FIELD INVESTIGATION

On July 13, 2022, Parametrix mobilized to the site to perform the field investigation. Ambient air summa canisters were collected at locations AMB-1 through AMB-4 and soil gas probe samples were collected at locations VP-1 through VP-3 (Figure 2). On July 18, 2022, an ambient air summa canister was collected at location AMB-5 and soil gas probe samples were collected for the remaining VP-4 through VP-8 (Figure 2). Field sampling sheets from the field investigation are attached in Appendix A. Photographs of the field investigation are also attached in Appendix A.

Ambient air measurements of LFG were measured with the GEM and recorded on the field sampling sheet along with the canister ID, regulator ID, initial pressure, Barometric pressure, and start time. The ambient air 6-liter summa canister intake was set at approximately 2.5 feet above ground level for each ambient sample.

Following opening the ambient air canisters, the soil gas probe sampling began. Temporary soil gas probes were installed into the landfill using a shovel to remove any initial surface rocks, then a 2.5-inch diameter hand auger was utilized to probe to approximately 2 feet. A narrow 1.5-inch diameter hand auger was then used to penetrate the top of the landfill. Once into the landfill a narrow ¾-inch diameter soil probe was pushed into to the landfill to make an area for inserting the temporary sampling tubing. Each of the probes were completed to approximately 3 to 3.75 feet below ground surface and at least 1 to 2 feet into landfill material. Landfill debris was observed on the field equipment. Further penetration into the landfill could not be completed due to refusal with the soil probe and required depth to penetrate the cover soils. The results in Section 3, below, show that despite not achieving the intended target depths proposed in the work plan, these depths were sufficient to encounter LFG and determine its composition across the landfill.

The landfill cover is comprised of sand, silt, and gravel. The cover on older portions of the landfill (i.e. the northeast slope) was relatively thick (2-2.5 feet) and consisted of very hard silt-bound quarry spalls and was difficult to excavate. This greatly reduced the ability to penetrate to the target depths. A rotary hammer was used to assist penetrating the landfill at location VP-7 and VP-8. At location VP-1 and VP-2 the landfill cover was much thinner approximately 1.5 feet and materials consisted of softer predominantly silty sand and gravel. Odors were apparent in olfactory observations (smelling) on the northwest slope of the landfill. The odors were generally observed to be consistent with a putrid LFG smell and faint petroleum hydrocarbons. At locations outside of the northwest slope and along the northern landfill boundary, no odors were apparent.

After creating the soil probe opening, Teflon and tygon tubing were inserted into the narrow entry and then hydrated bentonite was placed at the surface to seal the temporary probe. The landfill cover was placed over the top of the bentonite to finish the seal. A sampling manifold was connected to the tubing and the valves were shut and allowed to sit for at least 15 minutes for pressure to equilibrate. The manifold was connected to both the GEM and summa canister.

While pressure equilibrated, the GEM was used to measure ambient air and air from 6-inches above ground surface. These measurements were recorded on the field sampling sheet. A seal check/shut-in test was completed by drawing a vacuum on the summa canister with the manifold in a closed position. The three-way valve on the manifold only allowed for a short duration shut-in test due to the type of connection to the plunger.

After the pressure equilibrated in the soil gas probe, the valve connected to the GEM was opened and the GEM was used to measure static pressure in the soil gas probe. The GEM was then used to purge the temporary soil gas probe a minimum of one probe volume plus extra meter tubing (30 to 50 seconds). Measurements were read at the start of purge (if methane was observed) and at the finish of purge. Measurements with the GEM were recorded on the field sampling sheet. Following measurements and purging with the GEM, the valves were switched over to the summa canister for collection of the VOCs and APH samples. The summa canister identification number, regulator number, initial pressure, and start time were recorded on the field sampling sheet. The 1-liter canister collected samples for approximately 5 minutes. When the pressure dropped to below 5 inches of mercury, the regulator was closed and the pressure and time were recorded on the field sampling sheet. The valve was then closed at the manifold and silicone and tygon tubing were connected to a tedlar bag. The silicone tubing was placed into a peristaltic pump and the tedlar bag was filled. Following filling of the tedlar bag, the temporary soi gas probe was removed from the landfill and placed in a garbage bag for disposal. The remaining hole was then plugged with bentonite and cover material. The process was repeated at each soil gas probe locations.

Following completion of the soil gas probes, the ambient air summa canisters were closed after collecting samples for approximately 6 hours. Ambient air measurements were collected with the GEM and the stop time and final pressure were recorded on the field sampling sheet. The samples were delivered to Friedman and Bruya, Inc. in Seattle, Washington the next day after sampling. To expediate the results, the samples were submitted rush on a 5-day turnaround time.

3. RESULTS

The results of the LFG investigation are presented in the attached tables. The laboratory results and chain of custodies are attached in Appendix B.

3.1 GEM Readings

Table 1 (attached) summarizes ambient air measurements collected with the GEM at the AMB-1 through AMB-5 locations. Barometric pressure ranged from 27.91 to 28.15 inches of Mercury. No methane was detected in the ambient air samples. Carbon dioxide was measured from 0% to 0.1% by volume. Carbon monoxide was measured from 0 to 0.1 parts per million (ppm). Oxygen ranged from 20.4 to 21.5% by volume. No hydrogen sulfide was detected.

Table 2 (attached) summarizes ambient air measurements and near surface measurements at the eight vapor probe locations (VP-1 through VP-8). No methane or hydrogen sulfide were detected in any of the locations. Carbon dioxide was measured from 0% to 0.1% by volume. Carbon monoxide was measured from 0 to 10 ppm. Oxygen was measured ranging from 20.4% to 22.1% by volume. Table 2 also displays the barometric pressures observed ranging from 27.96 to 28.12 inches of mercury and the static pressures in the soil gas probes. Soil gas probes VP-1 and VP-8 showed a static pressure of 0.03 inches of mercury. VP-7 was measured to have a static pressure of 0.02 inches of mercury. VP-5, VP-6, and VP-8 were measured to have a static pressure of 0.01 inches of mercury. VP-2, VP-3, and VP-4 were measured to have a neutral static pressure of 0.00 inches of mercury. No methane was observed on the initial purge of the soil gas probes except for VP-6 at 0.1% by volume.

Table 3 (attached) summarizes the field measurements from the GEM after purging one probe volume (plus GEM tubing) except for location VP-2. At VP-2, GEM readings could not be made due to overheating of the equipment. VP-1 was the only probe found to have methane at 4.2% by volume. Methane was not detected in any of the other soil gas probes. Carbon dioxide was measured at 20.4% at VP-1 and ranged from 1.1% to 13.6% in the rest of the probes. Carbon monoxide was measured at 757 ppm at VP-1 and was 1 ppm at the rest of the probes. Oxygen was measured at 0.4% at VP-1. Oxygen ranged from 9.7% to 19.7% in the rest of the probes. Hydrogen sulfide was measured at 39 ppm in VP-1 and was 0 to 1 ppm in the rest of the probes.

3.2 Laboratory Results

Table 3 also summarizes the laboratory results from the tedlar bag samples for major gases using EPA Method 3C. VP-1 was found at 1.59% methane by volume, 23.2% carbon dioxide, <0.05% carbon monoxide, 1.83% oxygen, <0.05% hydrogen, and 73.3% nitrogen. No methane or carbon monoxide were detected in any of the other soil gas probe samples. The results from the GEM and from the laboratory results primarily show VP-1 as the only area generating LFG.

Laboratory results for VOCs and APH were compared to MTCA Method B cleanup (air) and screening levels (subsurface). Cancer cleanup levels are based upon a 70 kg person being exposed daily continuously for a period of 30 years and one person out of one million people would develop cancer (WAC 173-340-750). Non-cancer cleanup levels are similarly based upon a 70 kg person being exposed continuously for a period of 6 years and one person out of one hundred thousand would develop non-cancerous conditions (i.e. target organ conditions based upon the chemical). Neither case occurs within the landfill facility; however, calculation of site-specific screening or cleanup levels was not part of or in the scope of this study. Use of the MTCA Method B cleanup and screening levels is predominantly for screening purposes based upon the initial results of the investigation.

Table 4 (attached) summarizes the laboratory results from the summa canisters for VOCs using EPA Method TO-15. Results for ambient air samples are compared to the MTCA Method B air cleanup levels for cancer and noncancer. As an industrial facility, MTCA Method B air cleanup levels may not directly apply to the landfill operations; however, the values provide some context for the results encountered and likely apply to levels beyond the landfill boundary (conditional point of compliance) in accordance with Chapter 173-340-750 (6) WAC.

Ambient air samples AMB-1, AMB-2, AMB-3, and AMB-5 were primarily non-detect except for acetone, CFC-12, and hexane with no exceedance of MTCA Method B cancer or noncancer cleanup levels. AMB-1 was located at the scale house outside of the influence of the landfill. As shown on the table, results for AMB-2, AMB-3, and AMB-5 are near identical to AMB-1 indicating these VOCs are background. AMB-4

which is northeast of the fissure area found detections of APH, acetone, benzene, CFC-12, ethylbenzene, hexane, m & p xylenes, naphthalene, o xylenes, tetrahydrofuran, and trichloroethene. APH was found at 175 micrograms per cubic meter (µg/m^3), just above the MTCA Method B cleanup level of 140 µg/m^3. Benzene was found at 10 µg/m^3, above the MTCA Method B cancer cleanup level of 0.32 µg/m^3 and below the noncancer cleanup level of 14 µg/m^3. Naphthalene was found at 0.97 µg/m^3, above the MTCA Method B cancer cleanup level of 0.074 µg/m^3 and below the MTCA Method B noncancer cleanup level of 1.4 µg/m^3. No other exceedances were found. As an industrial facility and landfill, workers are certified with Hazardous Waste Operations and Emergency Response (HAZWOPER) training and exposure hazards on the site related to the petroleum hydrocarbon and related VOCs are managed through DTG's operational practices.

Soil gas probe results for VP-2 through VP-8 show similar results across the landfill. VP-1 was found to have higher concentrations of VOCs and APH. Soil probe results were compared to sub-slab soil gas screening levels for commercial workers. This is generally a screening level for workers inside a building and is not a direct correlation to the landfill but is useful in identifying if there could be a potential emission concern. For VP-2 through VP-8, total APH was found ranging from 1,960 to 5,910 µg/m^3. These concentrations are below the commercial worker sub-slab screening level of 13,000 µg/m^3 indicating emissions are unlikely. VP-1 was found at 2,600,000 for APH EC5-8 aliphatics, or equivalent to gasoline range petroleum hydrocarbons, at 110,000 µg/m^3 for APH EC9-12 aliphatics, or equivalent to diesel-range, and less than 52,000 µg/m^3 for EC9-10 aromatics, or equivalent to petroleum related semi-volatiles. LFG and petroleum odor was observable at VP-1 indicative of active emissions. As noted above, AMB-4 showed emissions present on the northwest slope within the facility boundary are limited to primarily petroleum hydrocarbons and related VOCs.

For VP-2 through VP-8, VOCs detected included 1,2-dichlorobenzene; 1,3-butadiene; 1,3-dichlorobenzene; 1,4-dioxane; 2-propanol, 2-methyl; acetone; benzene; butane; CFC-11; CFC-12; chloroform; dibromochloromethane; dichlorobromomethane; ethylbenzene; hexane; m and p xylenes; methyl isobutyl ketone; naphthalene; o xylenes; propene; styrene; tetrachloroethene; tetrahydrofuran; trichloroethene, and vinyl acetate. Concentrations were below MTCA Method B sub-slab screening levels except for 1,3-butadiene at VP-2; benzene at VP-2, VP-3, VP-6, and VP-8; and chloroform at VP-4. As noted, this is not directly applicable as there is no building over the landfill. The comparison is just for screening for potential emissions. None of these analytes above sub-slab screening levels were found in ambient air samples except for benzene at AMB-4 near the fissure area and these results appear generally consistent with the disposal of treated PCS and construction and demolition debris into the LPL.

VP-1 results appear similar to the Freestone A-1 through A-3 samples. Table 5 (attached) compares the previous results with VP-1. The results from VP-1 are largely an order of magnitude higher for many VOCs. Some VOCs could not be detected largely related to the dilution required for analysis. In addition to the VOCs found from A-1 through A-3, VP-1 also found 1,2-dichloroethane, vinyl acetate, and previously discussed APH. Many of the VOCs were detected at concentrations above the sub-slab screening levels; however, as noted above, only benzene, naphthalene, and APH were found above air cleanup levels in the nearby ambient air sample AMB-4.

Methylene chloride and acrolein were detected in multiple samples. These have been identified as false positives due to laboratory and canister contamination. Methylene chloride is the primary solvent used at the laboratory and results were flagged by the lab. Acrolein is a common false positive specific to summa canisters and growth on the walls of the canister. The chemical can remain in the canister and grow even following steam cleaning (Dann and Wang, 2007; Shelow et al., 2009). Exceedances related to these two VOCs are not anticipated to be related to the LPL.

4. DISCUSSION

The GEM readings and laboratory results show the LFG at the site is primarily confined to the northwestern slope near location VP-1. VOCs combined with the APH concentrations indicate the likely source is petroleum contaminated soils (PCS) disposed of in the landfill prior to DTG's acquisition of the property. The PCS and related LFG appears limited to an approximate 1-acre area surrounding location VP-1. LFG and petroleum odors are noticeable in the VP-1 area and olfactory observations appear generally consistent with the laboratory results. APH, benzene, and naphthalene emissions within the VP-1 area of the landfill were found above MTCA Method B cancer cleanup levels for air. The results from this investigation and the Freestone investigation (samples S-4 through S-8) show the exceedances of MTCA Method B cleanup levels appear limited to the VP-1 vicinity and remain within the landfill property boundary (conditional point of compliance). As a landfill, industrial property, and historical PCS acceptance facility, workers are trained to limit exposures to petroleum hydrocarbons and related VOCs.

The assumed breakdown of the PCS at VP-1 is leading to some amount of methanogenesis within the landfill. Available oxygen concentrations at VP-1 were found at 0.4% to 1.83% by volume indicative of anerobic conditions in the area. As discussed above, methane was found at 4.2% by volume with the GEM and 1.59% by volume in the tedlar sample. The results show the area is currently below the lower explosive limit (LEL) of 5% by volume which is the regulatory limit at the property boundary (conditional point of compliance). Nitrogen was found at 73.3% at VP-1.

There was concern about the potential of an underground fire related to high temperatures measured at VP-1 by Freestone in addition to the VOCs. Carbon monoxide was measured with the GEM and also analyzed by EPA Method 3C. Previous analysis of underground fires compiled by Federal Emergency Management Agency (FEMA) generally indicate that exceedances of 1,000 ppm of carbon monoxide are likely indicative of an underground fire and levels from 100 ppm to 1,000 ppm indicate further investigation may be necessary.

GEM readings at VP-1 were measured up to 757 ppm at one probe volume; however, readings with the GEM can be affected artificially high by the presence of VOCs according to CalRecycle (2006) and other sources. A Tedlar bag was filled after the 1-Liter summa canister was filled (approximately 5 minutes after measurements with the GEM) and was found to be non-detect (<0.05% by volume) for carbon monoxide.

Further, FEMA (2002) also identifies temperatures in excess of 170 degrees F as indicative of a landfill fire. The previous recorded temperatures had a maximum temperature of 145 degrees. These measurements when combined with the results of the carbon monoxide analysis appear to show there is not likely an underground fire near location VP-1.

Cover materials at the landfill may also be influencing the amount of LFG escaping the subsurface. Observations of the landfill cover during excavation for the soil gas probes showed the northwestern slope in the vicinity of VP-1 were relatively shallow (1.5 feet) and coarser-grained materials compared to the rest of the landfill.

5. CLOSING

Eight soil gas probes and five ambient air samples were analyzed for LFG with a GEM and through laboratory analysis. The results from this investigation confirm that the LFG issue at the LPL is limited to approximately 1-acre area on the northwest slope near location VP-1. The LFG and heat being generated appears related to the breakdown of PCS buried within the landfill as confirmed by predominantly petroleum hydrocarbons and related VOCs within the sample from location VP-1. Ambient air samples collected near the VP-1 area at location AMB-4 indicate conditions above MTCA Method B air cleanup levels consisting of APH, benzene, and naphthalene. Current and previous results of ambient air samples show this is confined to within the landfill property boundary (conditional point of compliance).

Carbon monoxide was not detected in laboratory samples and measured temperatures by Freestone are below that which would indicate an underground fire; therefore, a landfill fire is not likely occurring.

Results from excavating into the landfill show cover soils in the area of VP-1 are shallower and coarser grained than other areas of the landfill. Additional cover may help control odors and prevent VOC emissions.

DTG will develop an action plan with input from YHD, YRCAA, and Ecology to determine next steps for landfill management and monitoring in accordance with Chapter 173-350-400 WAC.

6. REFERENCES

California Department of Resources Recycling and Recovery (CalRecycle). 2006. Landfill Fires Guidance Document. available online at http://www.calrecycle.ca.gov/swfacilities/fires/LFFiresGuide/default.htm

Dann, T., and D. Wang. 2007. Canada's Experience with Acrolein Measurements Using Canisters – Preliminary Results. Presented at NESCAUM Monitoring and Assessment Committee Meeting, Troy, NH. April 24-25, 2007.

Ecology. 2022. Letter regarding DTG Yakima Limited Purpose Landfill – Landfill Gas Generation

Federal Emergency Management Agency (FEMA). 2002. Landfill Fires: Their Magnitude, Characteristics, and Mitigation, May 2002/FA-225. U.S. Fire Administration, National Fire Data Center.

Freestone Environmental Services. 2022. Soil Gas and Ambient Air Sampling Report, as prepared for DTG Enterprises, Inc.

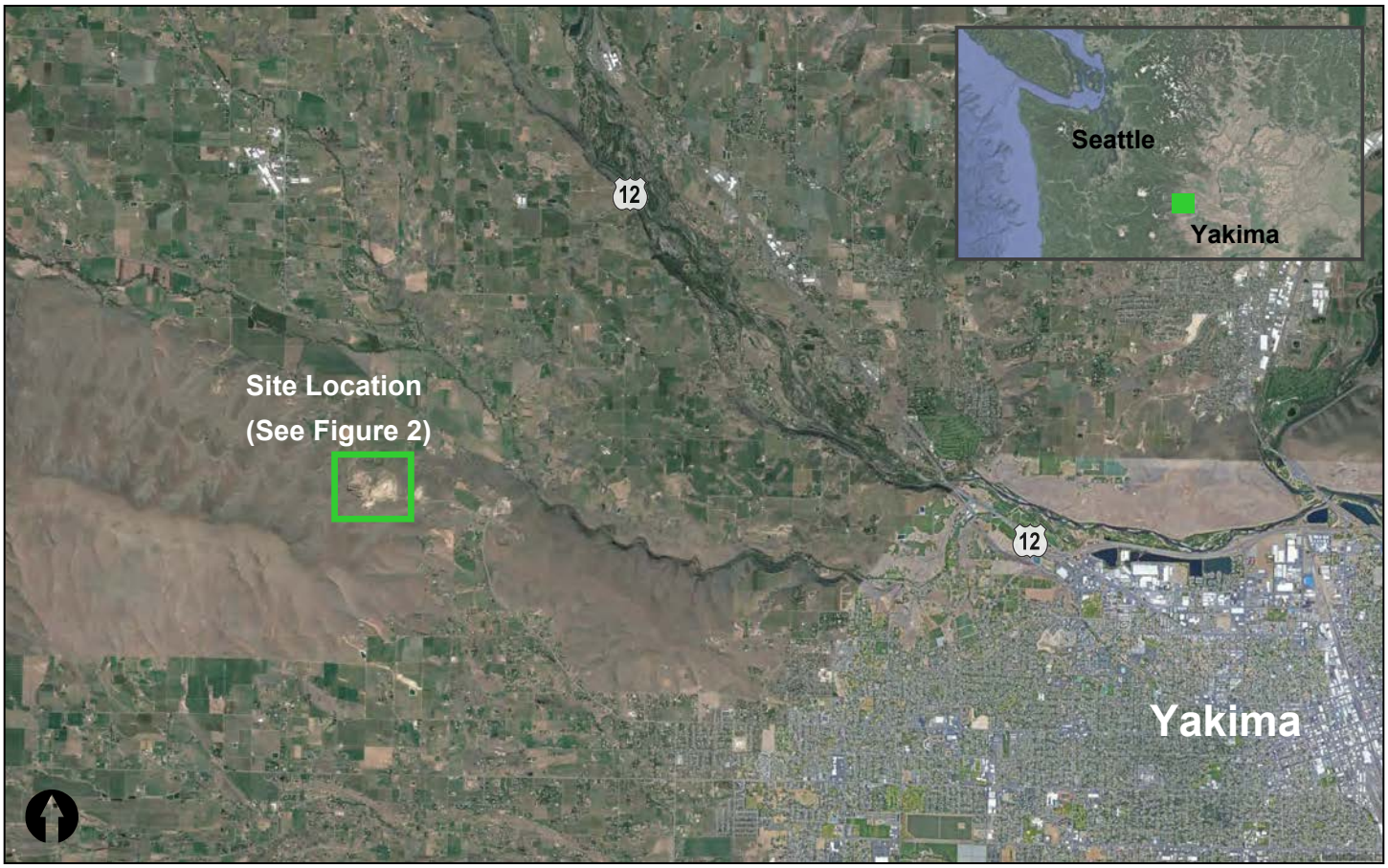
Ohio Environmental Protection Agency. 2001. Subsurface Heating Events at Solid Waste and Construction and Demolition Debris Landfills: Best Management Practices, Guidance Document #1009

Parametrix. 2022. Work Plan – Landfill Gas Investigation, Yakima Limited Purpose Landfill, as prepared for DTG Enterprises, Inc.

Shelow, D., et al. 2009. Acrolein Measurements. Presentation at 2009 National Ambient Air Monitoring Conference, Nashville, TN.

Yakima Regional Clean Air Agency. 2022. Letter regarding NSR application determination for DTG Recycle, for the LPL

Figures

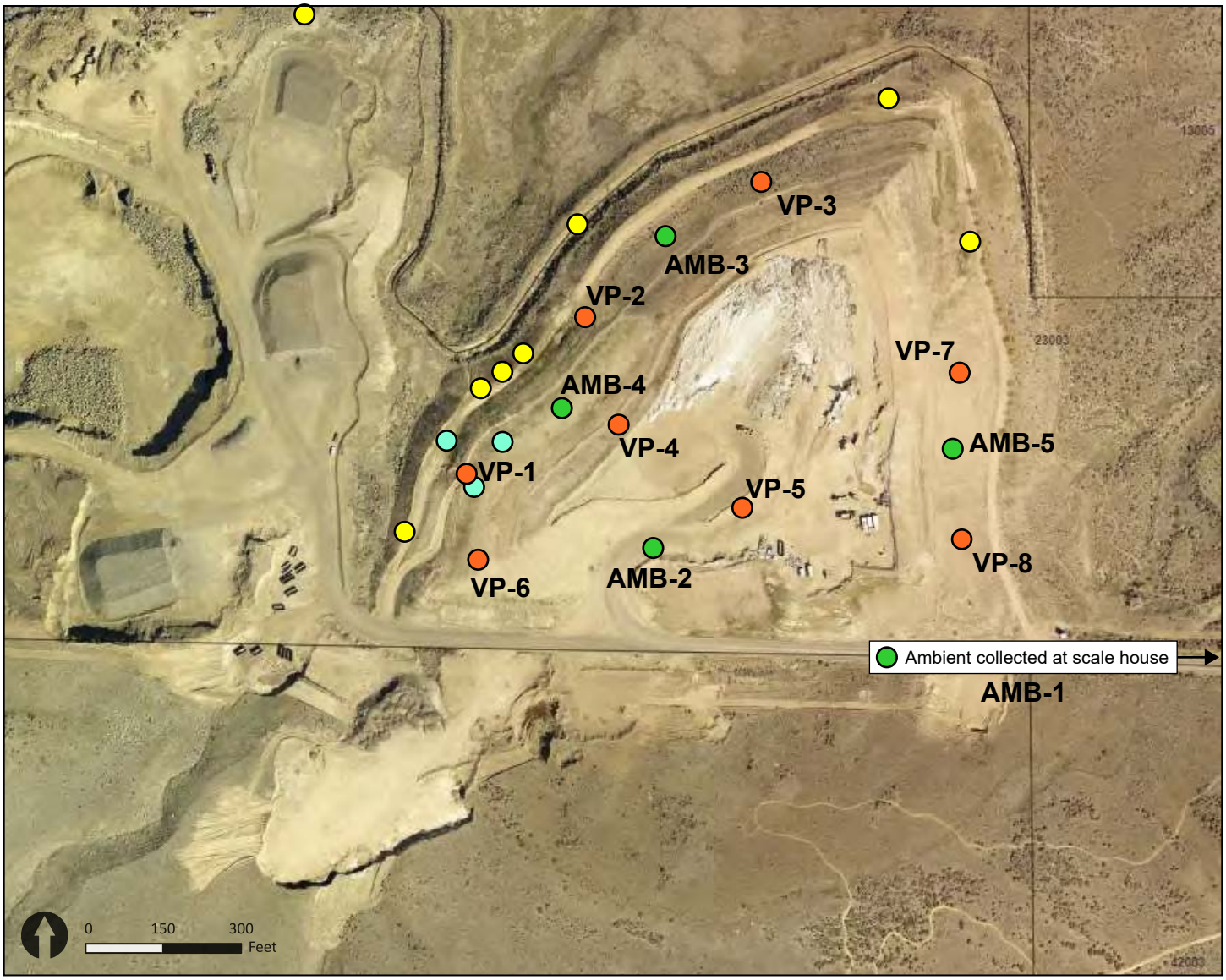


Parametrix

Figure 1

Vicinity Map

DTG Enterprises, Inc.
Yakima LPL Landfill Gas Investigation



Parametrix

Basemap from Yakima Planning GIS (2021 Aerials)

- Previous soil gas
- New soil gas
- Previous ambient
- New ambient

* all locations approximate

Figure 2

Sample Location Map

DTG Enterprises, Inc.
Yakima LPL Landfill Gas Investigation

Tables

Table 1. Ambient Air Measurements with Landtec GEM 5000 (DTG Enterprises, Inc. Yakima LPL)

	Sample I.D.				
	AMB-1	**AMB-2**	**AMB-3**	**AMB-4**	**AMB-5**
Barometric Pressure	**28.05**	**27.91**	**27.94**	**27.96**	**28.15**
Start time	**10:13**	**10:37**	**10:50**	**11:07**	**9:27**
Methane	0%	0%	0%	0%	0%
Carbon Dioxide	0.1%	0.1%	0.1%	0%	0%
Carbon Monoxide	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
Oxygen	20.6%	20.4%	20.5%	20.5%	20.9%
Hydrogen Sulfide	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
Stop time	**16:05**	**16:30**	**16:19**	**16:05**	**15:05**
Methane	0%	0%	0%	0%	NM
Carbon Dioxide	0%	0%	0%	0%	NM
Carbon Monoxide	1 ppm	1 ppm	1 ppm	1 ppm	NM
Oxygen	21.0%	21.1%	21.5%	21.3%	NM
Hydrogen Sulfide	0 ppm	0 ppm	0 ppm	0 ppm	NM

NM - Not measured

ppm - parts per million

% - percent by volume

Table 2. Vapor Probe Measurements with Landtec GEM 5000 (DTG Enterprises, Inc. Yakima LPL)

	Sample I.D.							
	VP-1	**VP-2**	**VP-3**	**VP-4**	**VP-5**	**VP-6**	**VP-7**	**VP-8**
Barometric Pressure	**27.98**	**27.99**	**27.99**	**27.96**	**28.04**	**28.08**	**28.11**	**28.12**
Static Pressure	**0.03**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.02**	**0.03**
Time	12:25	13:50	15:15	12:57	13:30	13:55	14:20	14:47
Ambient Air								
Methane	0%	0%	0%	0%	0%	0%	0%	0%
Carbon Dioxide	0%	0%	0%	0.1%	0.1%	0.1%	0.1%	0%
Carbon Monoxide	0 ppm	10 ppm	1 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
Oxygen	20.7%	20.7%	22.3%	20.4%	20.4%	20.8%	20.5%	21.0%
Hydrogen Sulfide	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
6-inches above ground								
Methane	0%	0%	0%	0%	0%	0%	0%	0%
Carbon Dioxide	0%	0%	0%	0.1%	0.1%	0%	0%	0%
Carbon Monoxide	0 ppm	5 ppm	1 ppm	0 ppm	1 ppm	0 ppm	1 ppm	1 ppm
Oxygen	20.6%	20.8%	22.1%	20.3%	20.5%	20.9%	20.7%	20.9%
Hydrogen Sulfide	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
Initial purge								
Methane	NM	NM[1]	NM	NM	NM	0.1%	NM	NM

NM - Not measured

ppm - parts per million

% - percent by volume

1 - GEM 5000 overheated, no measurements

Table 3. Gases by EPA Method 3C and Field Measurements with Landtec GEM 5000 (DTG Enterprises, Inc. Yakima LPL)

	Sample I.D.															
	VP-1		VP-2		VP-3		VP-4		VP-5		VP-6		VP-7		VP-8	
	Lab Results	GEM 5000	Lab Results	GEM 5000	Lab Results	GEM 5000	Lab Results	GEM 5000	Lab Results	GEM 5000	Lab Results	GEM 5000	Lab Results	GEM 5000	Lab Results	GEM 5000
Methane	1.59%	4.2%	<0.05%	NM[1]	<0.05%	0.0%	<0.05%	0.0%	<0.05%	0.0%	<0.05%	0.0%	<0.05%	0.0%	<0.05%	0.0%
Carbon Dioxide	23.2%	20.4%	0.6%	NM[1]	1.34%	1.6%	3.9%	3.5%	17.3%	13.6%	9.35%	8.5%	13.0%	10.6%	0.793%	1.1%
Carbon Monoxide	<0.05%	757 ppm	<0.05%	NM[1]	<0.05%	1ppm	<0.05%	1 ppm	<0.05%	1 ppm	<0.05%	1 ppm	<0.05%	1 ppm	<0.05%	0 ppm
Oxygen	1.83%	0.4%	22.9%	NM[1]	22.2%	19.6%	19.9%	17.1%	10.5%	9.7%	15.4%	12.4%	11.5%	9.8%	23.2%	19.7%
Hydrogen	<0.05%	NM	<0.05%	NM[1]	<0.05%	NM	<0.05%	NM	<0.05%	NM	<0.05%	NM	<0.05%	NM	<0.05%	NM
Nitrogen	73.3%	NM	76.5%	NM[1]	76.5%	NM	76.2%	NM	72.2%	NM	75.2%	NM	75.4%	NM	76.0%	NM
BTU	16.1 BTU/ft3	NM	ND	NM[1]	ND	NM	ND	NM	ND	NM	ND	NM	ND	NM	ND	NM
Hydrogen Sulfide	NA	39 ppm	NA	NM[1]	NA	1 ppm	NA	1 ppm	NA	0 ppm	NA	0	NA	0	NA	0

ND - Not detected

NM - Not measured

NA - Not Analyzed

ppm - parts per million

% - percent by volume

1 - GEM 5000 overheated, no measurements

Table 4. VOCs by EPA Method TO-15 (DTG Enterprises, Inc. Yakima LPL)

Chemical	Sub-Slab Soil Gas Screening Level Commercial Wkr Noncancer (µg/m³)	Sub-Slab Soil Gas Screening Level Commercial Wkr Cancer (µg/m³)	VP-1 (µg/m³)	VP-2 (µg/m³)	VP-3 (µg/m³)	VP-4 (µg/m³)	VP-5 (µg/m³)	VP-6 (µg/m³)	VP-7 (µg/m³)	VP-8 (µg/m³)	Air Method B Noncancer (Eq. 750-1) (µg/m³)	Air Method B Cancer (Eq. 750-2) (µg/m³)	AMB-1 (µg/m³)	AMB-2 (µg/m³	AMB-3 (µg/m³	AMB-4 (µg/m³	AMB-5 (µg/m³
APH EC5-8 aliphatics	13000.0		**2600000**	**2100**	**2700**	**5100**	**2000**	**2000**	**1600**	**1500**	140		110 U	140 U	90 U	**110**	140 U
APH EC9-10 aromatics			52000 U	250 U	270 U	240 U	250 U	160 U	160 U	170 U			37 U	47 U	30 U	30 U	47 U
APH EC9-12 aliphatics			**110000**	**330**	**850**	**710**	**300**	**640**	**360**	**530**			37 U	47 U	30 U	**50**	47 U
1,1,1-Trichloroethane	650000	N/A	1100 U	5.5 U	6.0 U	5.2 U	5.5 U	3.6 U	3.4 U	3.7 U	2300	N/A	0.82 U	1.0 U	0.65 U	0.65 U	1.0 U
1,1,2,2-Tetrachloroethane	N/A	6.7	290 U	1.4 U	1.5 U	1.3 U	1.4 U	0.9 U	0.9 U	0.9 U	N/A	0.34	0.21 U	0.26 U	0.16 U	0.16 U	0.26 U
1,1,2-Trichloroethane	26	24	110 U	0.6 U	0.6 U	0.5 U	0.6 U	0.4 U	0.3 U	0.4 U	0.091	0.16	0.082 U	0.10 U	0.065 U	0.065 U	0.10 U
1,1-Dichloroethane	N/A	240	850 U	4.0 U	4.5 U	3.9 U	4.0 U	2.7 U	2.5 U	2.7 U	N/A	1.60	0.61 U	0.77 U	0.49 U	0.49 U	0.77 U
1,1-Dichloroethene	26000	N/A	830 U	4.0 U	4.4 U	3.8 U	4.0 U	2.6 U	2.5 U	2.7 U	91	N/A	0.59 U	0.75 U	0.48 U	0.48 U	0.75 U
1,2,4-Trichlorobenzene	260	N/A	1600 U	7.4 U	8.2 U	7.1 U	7.4 U	4.9 U	4.7 U	5.0 U	0.91	N/A	1.1 U	1.4 U	0.89 U	0.89 U	1.4 U
1,2,4-Trimethylbenzene	7800	N/A	10000 U	49 U	54 U	47 U	49 U	32 U	31 U	33 U	27	N/A	7.4 U	9.3 U	5.9 U	5.9 U	9.3 U
1,2-Dibromoethane	1200	0.65	160 U	0.77 U	0.85 U	0.74 U	0.77 U	0.51 U	0.48 U	0.51 U	4.1	0.0042	0.12 U	0.15 U	0.092 U	0.092 U	0.15 U
1,2-Dichlorobenzene	26000	N/A	1300 U	6.0 U	6.6 U	5.8 U	6.0 U	4.0 U	**5.0**	4.0 U	91	N/A	0.90 U	1.1 U	0.72 U	0.72 U	1.1 U
1,2-Dichloroethane	910	15	**1400**	0.40 U	0.45 U	0.39 U	0.40 U	0.27 U	0.25 U	0.27 U	3.2	0.10	0.061 U	0.08 U	0.049 U	0.049 U	0.077 U
1,2-Dichloropropane	520	110	490 U	2.3 U	2.5 U	2.2 U	2.3 U	1.5 U	1.5 U	1.5 U	1.8	0.68	0.35 U	0.44 U	0.28 U	0.28 U	0.44 U
1,3,5-Trimethylbenzene	7800	N/A	10000 U	49 U	54 U	47 U	49 U	32 U	31 U	33 U	27	N/A	7.4 U	9.3 U	5.9 U	5.9 U	9.3 U
1,3-Butadiene	260	13	93 U	**27**	**6.4**	0.4 U	0.4 U	0.3 U	**4.6**	0.3 U	0.91	0.083	0.066 U	0.084 U	0.053 U	0.053 U	0.084 U
1,3-Dichlorobenzene	N/A	N/A	1300 U	**19**	**21**	**6.3**	**11**	**5.1**	**10**	**11**	N/A	N/A	0.90 U	1.1 U	0.72 U	0.72 U	1.1 U
1,4-Dichlorobenzene	100000	35	480 U	**15**	**18**	**4.9**	**5.4**	**6.2**	**5.1**	**3.7**	370	0.23	0.34 U	0.43 U	0.27 U	0.27 U	0.43 U
1,4-Dioxane	3900	78	**7100**	**4.1**	**4.7**	3.5 U	3.6 U	2.4 U	2.3 U	2.4 U	14	0.50	0.54 U	0.68 U	0.43 U	0.43 U	0.68 U
2,2,4-Trimethylpentane	N/A	N/A	9800 U	47 U	51 U	45 U	47 U	31 U	29 U	31 U	N/A	N/A	7.0 U	8.9 U	5.6 U	5.6 U	8.9 U
2-Butanone	650000	N/A	**160000**	59 U	65 U	57 U	59 U	39 U	37 U	40 U	2300	N/A	8.8 U	11.0 U	7.1 U	7.1 U	11 U
2-Chlorotoluene	N/A	N/A	11000 U	52 U	57 U	50 U	52 U	34 U	33 U	35 U	N/A	N/A	7.8 U	9.8 U	6.2 U	6.2 U	9.8 U
2-Hexanone	3900	N/A	8600 U	41 U	45 U	39 U	41 U	27 U	26 U	27 U	14	N/A	6.1 U	7.8 U	4.9 U	4.9 U	7.8 U
2-Propanol, 2-methyl-	N/A	N/A	25000 U	120 U	**160**	120 U	120 U	80 U	76 U	140	N/A	N/A	18 U	23 U	15 U	15 U	23 U
3-Chloropropene	N/A	N/A	**16000** E	**31** E	**34** E	30 U	31 U	21 U	20 U	21 U	N/A	N/A	4.7 U	5.9 U	3.8 U	3.8 U	5.9 U
4-Ethyltoluene	N/A	N/A	10000 U	49 U	54 U	47 U	49 U	32 U	31 U	33 U	N/A	N/A	7.4 U	9.3 U	5.9 U	5.9 U	9.3 U
Acetone	N/A	N/A	**450000** E	**210**	**440** E	**78**	**70**	**200**	**190**	**340** E	14000	N/A	**16**	**19**	**20**	**14**	**14**
Acrolein	2.6	N/A	240 U	8.7 FP	3.8 FP	3.4 FP	3.5 FP	10 FP	10 FP	40 FP	0.0091	N/A	0.20 FP	0.31 FP	0.14 FP	0.27 FP	0.23 FP
Benzene	3900	50	**530000** E	**260**	**340**	**20**	**22**	**150**	**50**	**180**	14	0.32	0.48 U	0.61 U	0.38 U	**10**	0.61 U
Benzyl chloride	130	7.9	110 U	0.52 U	3.1 U	0.50 U	0.52 U	0.34 U	0.33 U	0.35 U	0.46	0.05	0.078 U	0.10 U	0.062 U	0.062 U	0.10 U
Bromoform	N/A	350	4300 U	21 U	23 U	20 U	21 U	14 U	13 U	14 U	N/A	2.3	3.1 U	3.9 U	2.5 U	2.5 U	3.9 U
Bromomethane	650	N/A	8200 U	39 U	43 U	37 U	39 U	26 U	24 U	26 U	2.3	N/A	5.8 U	7.4 U	4.7 U	4.7 U	7.4 U
Butane	N/A	N/A	**160000**	48 U	52 U	46 U	**440** E	**120**	30 U	32 U	N/A	N/A	7.1 U	9.0 U	5.7 U	5.7 U	9.0 U
Carbon disulfide	91000	N/A	13000 U	62 U	69 U	60 U	62 U	41 U	39 U	42 U	320	N/A	9.3 U	12.0 U	7.5 U	7.5 U	12.0 U
Carbon tetrachloride	13000	65	660 U	3.1 U	3.5 U	**9.1**	3.1 U	2.1 U	2.0 U	2.1 U	46	0.42	0.47 U	0.60 U	0.38 U	0.38 U	0.60 U
CFC-11	91000	N/A	4700 U	22 U	**38**	**220**	**1200** E	**39**	**40**	**28**	320	N/A	3.4 U	4.3 U	2.7 U	2.7 U	4.3 U
CFC-113	650000	N/A	1600 U	7.7 U	8.4 U	7.4 U	7.7 U	5.1 U	4.8 U	5.1 U	2300	N/A	1.1 U	1.5 U	0.9 U	0.9 U	1.5 U
CFC-12	13000	N/A	2100 U	9.9 U	**23**	**18**	**150**	**18**	**320**	**7.8**	46	N/A	**2.0**	**2.0**	**1.2**	**1.3**	**2.1**
Chlorobenzene	6500	N/A	970 U	4.6 U	5.1 U	4.4 U	4.6 U	3.0 U	2.9 U	3.1 U	23	N/A	0.69 U	0.87 U	0.55 U	0.55 U	0.87 U
Chloroethane	1300000	N/A	14000 U	26 U	29 U	25 U	26 U	17 U	17 U	18 U	4600	N/A	4.0 U	5.0 U	3.2 U	3.2 U	5.0 U
Chloroform	13000	17	100 U	**0.54**	**5.2**	**170**	**8.7**	**25**	**7.7**	**11**	45	0.11	0.073 U	0.093 U	0.059 U	0.059 U	0.093 U
Chloromethane	12000	N/A	**470000** E	**62**	41 U	36 U	37 U	25 U	23 U	25 U	41	N/A	5.6 U	7.1 U	4.5 U	4.5 U	7.1 U
cis-1,2-Dichloroethene	N/A	N/A	830 U	4.0 U	4.4 U	3.8 U	4.0 U	2.6 U	2.5 U	2.7 U	N/A	N/A	0.59 U	0.75 U	0.48 U	0.48 U	0.75 U
cis-1,3-Dichloropropene	2600	97	1900 U	9.1 U	10 U	8.7 U	9.1 U	6.0 U	5.7 U	6.1 U	9.1	0.63	1.4 U	1.7 U	1.1 U	1.1 U	1.7 U
Cyclohexane	780000	N/A	14000 U	69 U	76 U	66 U	69 U	45 U	43 U	46 U	2700	N/A	10.0 U	13.0 U	8.3 U	8.3 U	13.0 U
Dibromochloromethane	N/A	N/A	180 U	0.85 U	0.94 U	0.82 U	**1.0**	0.56 U	0.54 U	0.57 U	N/A	N/A	0.13 U	0.16 U	0.10 U	0.10 U	0.16 U
Dichlorobromomethane	N/A	N/A	140 U	0.67 U	0.74 U	**2.3**	**1.9**	0.44 U	**0.59**	**0.54**	N/A	0.068	0.10 U	0.13 U	0.080 U	0.080 U	0.13 U
Ethanol	N/A	N/A	39000 U	75 U	83 U	72 U	75 U	50 U	47 U	50 U	N/A	N/A	11 U	14 U	9.0 U	9.0 U	14.0 U
Ethyl acetate	9100	N/A	15000 U	72 U	79 U	69 U	72 U	48 U	45 U	48 U	32	N/A	11 U	14 U	8.6 U	8.6 U	14.0 U
Ethylbenzene	130000	N/A	**120000**	**24**	**64**	4.2 U	4.3 U	**4.7**	**2.8**	**5.7**	460	N/A	0.65 U	0.83 U	0.52 U	**5.50**	0.83 U
F-114	N/A	N/A	4400 U	21 U	23 U	20 U	21 U	14 U	13 U	14 U	N/A	N/A	3.1 U	4.0 U	2.5 U	2.5 U	4.0 U

Table 4. continued VOCs by EPA Method TO-15 (DTG Enterprises, Inc. Yakima LPL)

Chemical	Sub-Slab Soil Gas Screening Level Commercial Wkr Noncancer (µg/m³)	Sub-Slab Soil Gas Screening Level Commercial Wkr Cancer (µg/m³)	VP-1 (µg/m³)	VP-2 (µg/m³)	VP-3 (µg/m³)	VP-4 (µg/m³)	VP-5 (µg/m³)	VP-6 (µg/m³)	VP-7 (µg/m³)	VP-8 (µg/m³)	Air Method B Noncancer (Eq. 750-1) (µg/m³)	Air Method B Cancer (Eq. 750-2) (µg/m³)	AMB-1 (µg/m³)	AMB-2 (µg/m³	AMB-3 (µg/m³	AMB-4 (µg/m³	AMB-5 (µg/m³
Heptane	52000	N/A	**67000**	41 U	45 U	39 U	41 U	27 U	26 U	27 U	180	N/A	6.1 U	7.8 U	4.9 U	4.9 U	7.8 U
Hexachlorobutadiene	N/A	18	450 U	2.1 U	2.3 U	2.0 U	2.1 U	1.4 U	1.3 U	1.4 U	N/A	0.11	0.32 U	0.41 U	0.26 U	0.26 U	0.41 U
Hexane	52000	N/A	**95000**	35 U	39 U	34 U	35 U	26	22 U	24 U	320	N/A	5.3 U	6.7 U	**5.8**	**4.9**	6.7 U
Isopropyl alcohol	N/A	N/A	18000 U	86 U	95 U	83 U	86 U	57 U	54 U	58 U	91	N/A	13 U	16 U	10 U	10 U	16 U
Isopropylbenzene (Cumene)	52000	N/A	51000 U	98 U	110 U	94 U	98 U	65 U	62 U	66 U	180	N/A	15 U	19 U	12 U	12 U	19 U
m, p-Xylene	13000	N/A	**23000**	**23**	**31**	**13**	8.7 U	**14**	**8.4**	**11**	46	N/A	1.3 U	1.7 U	1.0 U	**2.2**	1.7 U
Methyl isobutyl ketone	390000	N/A	8600 U	**170**	**84**	39 U	41 U	**45**	**35**	**54**	1400	N/A	6.1 U	7.8 U	4.9 U	4.9 U	7.8 U
Methyl methacrylate	91000	N/A	8600 U	41 U	45 U	39 U	41 U	27 U	26 U	27 U	320	N/A	6.1 U	7.8 U	4.9 U	4.9 U	7.8 U
Methyl t-butyl ether	390000	1500	15000 U	72 U	79 U	69 U	72 U	48 U	45 U	48 U	1400	10	11 U	14 U	8.7 U	8.7 U	14 U
Methylene chloride	78000	39000	73000 U	350 U	380 U	330 U	350 U	410 LC	220 U	230 U	270	66	120 LC	140 LC	160 LC	110 LC	160 LC
Naphthalene	390	11	550 U	2.6 U	2.9 U	2.4 U	2.4 U	**2.0**	1.7 U	1.8 U	1.4	0.074	0.057 U	0.057 U	0.057 U	**0.97**	0.057 U
Nonane	N/A	N/A	27000 U	52 U	58 U	50 U	52 U	35 U	33 U	35 U	N/A	N/A	7.9 U	10.0 U	6.3 U	6.3 U	10.0 U
o-Xylene	13000	N/A	**8200**	**8.6**	**18**	**6.0**	4.3 U	**6.3**	**3.6**	**4.5**	46	N/A	0.65 U	0.83 U	0.52 U	**1.3**	0.83 U
Pentane	N/A	N/A	**130000** E	**59** E	**65** E	**2100** E	59 U	39 U	37 U	40 U	460	N/A	8.9 U	11.0 U	7.1 U	7.1 U	11.0 U
Propene	N/A	N/A	**400000** E	**120**	**16**	**28**	12 U	8 U	**22**	**37**	N/A	N/A	1.8 U	2.3 U	1.4 U	**9.0**	2.3 U
Propylbenzene	130000	N/A	10000 U	49 U	54 U	47 U	49 U	32 U	31 U	33 U	460	N/A	7.4 U	9.3 U	5.9 U	5.9 U	9.3 U
Styrene	130000	N/A	**6800**	**53**	**2100** E	8.2 U	8.5 U	**8.5**	**17.0**	**120**	460	N/A	1.3 U	1.6 U	1.0 U	1.0 U	1.6 U
Tetrachloroethene	5200	1500	14000 U	68 U	**140**	65 U	68 U	45 U	**60**	45 U	18	10	9.6 U	9.6 U	8.1 U	8.1 U	9.6 U
Tetrahydrofuran	260000	N/A	**210000**	**18**	6.5 U	5.7 U	5.9 U	3.9 U	3.7 U	4.0 U	910	N/A	0.88 U	1.10 U	0.71 U	**0.98**	1.1 U
Toluene	650000	N/A	**220000**	190 U	210 U	180 U	190 U	120 U	120 U	130 U	2300	N/A	28 U	36 U	23 U	23 U	36 U
trans-1,2-Dichloroethene	5200	N/A	830 U	4.0 U	4.4 U	3.8 U	4.0 U	2.6 U	2.5 U	2.7 U	18	N/A	0.59 U	0.75 U	0.48 U	0.48 U	0.75 U
trans-1,3-Dichloropropene	2600	97	950 U	4.5 U	5.0 U	4.4 U	4.5 U	3.0 U	2.9 U	3.0 U	9.1	0.63	0.68 U	0.86 U	0.54 U	0.54 U	0.86 U
Trichloroethene	260	95	230 U	1.1 U	**3.2**	1.0 U	**1.2**	**1.1**	**1.5**	0.72 U	0.91	0.33	0.16 U	0.20 U	0.13 U	**0.13**	0.20 U
Vinyl acetate	26000	N/A	**37000** E	**70** E	**77** E	68 U	70 U	46 U	44 U	47 U	91	N/A	11.0 U	13.0 U	8.5 U	8.5 U	13.0 U
Vinyl bromide	390	26	920 U	4.4 U	4.8 U	4.2 U	4.4 U	2.9 U	2.8 U	2.9 U	1.4	0.17	0.66 U	0.83 U	0.52 U		0.83 U
Vinyl chloride	13000	44	540 U	2.6 U	2.8 U	2.5 U	2.6 U	1.7 U	1.6 U	1.7 U	46	0.28	0.28 U	0.28 U	0.28 U	0.59 U	0.28 U

U - analyte was not detected
E - The analyte response exceeded the valid instrument calibration range, the result is an estimate
LC - The presence is likely due to laboratory contamination
FP - Likely false positive from canister contamination (Dann and Wang, 2007; Shelow, et al, 2009)
Bold - indicates a detection

+A41:AEA1:AE87

Table 5. VP-1 and Previous Results Comparison (DTG Enterprises, Inc.

	A-1 µg/m3	A-2 µg/m3	A-3 µg/m3	VP-1 µg/m3
1,2,4-Trimethylbenzene	9,881	3,706	865	U
1,3,5-Trimethylbenzene	10,422	3,422	777	U
1,4-Dioxane	20,073	5,838	1,578	7,100
2-Butanone (MEK)	42,464	7,048	U	160,000
2-Hexanone (MBK)	1,942	U	U	U
2-Propanol (IPA)	98,061	10,126	1,366	U
4-Ethyltoluene	8,997	2,979	639	U
4-Methyl-2-pentanone	1,557	U	U	U
Acetone	105,946	11,521	U	450,000
Benzene	370,583	80,825	4,696	530,000
Carbon Disulfide	U	1,825	1,320	U
Chlorobenzene	1,004	U	U	U
Chloroethane	2,929	834	U	U
Chloromethane	158,388	8,446	U	470,000
Cyclohexane	3,415	1,494	U	U
Ethanol	8,611	1,850	U	U
Ethylbenzene	59,050	40,814	8,858	120,000
Heptane	51,227	21,474	795	67,000
Hexane	68,725	29,851	529	95,000
m & p xylene	40,861	13,244	2,293	23,000
Methanol	163,804	15,594	1,690	NA
o-Xylene	26,445	9,249	1,685	8,200
Propene	256,438	43,199	U	400,000
Styrene	9,882	2,172	486	6,800
Tetrahydrofuran	53,964	9,142	637	210,000
Toluene	67,449	44,464	5,803	220,000
pentane	36,000	18,000	U	130,000
3-chloropropene	NR	NR	NR	16,000
1,2-dichloroethane	NR	NR	NR	1,400
vinyl acetate	NR	NR	NR	37,000
APH EC5-8 aliphatics	NA	NA	NA	2,600,000
APH EC9-10 aromatics	NA	NA	NA	U
APH EC9-12 aliphatics	NA	NA	NA	110,000

NA - Not Analyzed

U - Not detected

NR - Not reported

Appendix A

Field Sampling Sheets and Photographs

PARAMETRIX

Sample Location ID: VP-1

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: MAKAH LFL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** ROCKY TOP
Sampled by: MBRADY/CPHMAC	**Date:** 7/13/22
Air Temperature: 86°	**Weather:** Sunny
Depth of Sample 3.5 (2' INTO LANDFILL)	**Static Pressure:** 0.03 **Barometric Pressure:** 27.98
Purge Volume: 65 mils	**Purge Time (550 ml/min):** 7.08 sec + 30 = ~40

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	Ø	Ø	Ø	20.7	Ø
Near Surface	Ø	Ø	Ø	20.6	Ø
Initial Purge	[illegible]	[illegible]	[illegible] ppm	[illegible]	[illegible] ppm
Final Reading	4.2	20.4	75 ppm	0.4	39 ppm

Sampling Information

Canister ID: 8209 1L	**Regulator ID:** 50
Initial Pressure: -28	**Final Pressure:** 4.5
Initial Purge Time: 1228	**Stop Purge Time:** 1234

Manifold / Canister Details:

Tedlar bag Sample ID: VP-1	**Tedlar bag sample time:** 1235
Laboratory Name: FBI	
Date Delivered to Lab: 7/14/22	**Delivery Method:** HAND

Notes:

Signature: MBrady

PARAMETRIX

Sample Location ID: VP-2

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: YAKIMA LPL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** ROCKY TOP
Sampled by: MBRADY/CPHAMA	**Date:** 07/13/2022
Air Temperature: 90	**Weather:**
Depth of Sample 3.5 (2' INTO LANDFIL)	**Static Pressure:** 0.0 **Barometric Pressure:** 27.99
Purge Volume: 65 mls	**Purge Time (550 ml/min):** [redacted]40 sec

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	ϕ	ϕ	10 ppm	20.7	ϕ
Near Surface	ϕ	ϕ	5 ppm	20.8	ϕ
Initial Purge	*	*	*	*	*
Final Reading	*	*	*	*	*

Sampling Information

Canister ID: 2301	**Regulator ID:** 67
Initial Pressure: -29	**Final Pressure:** -4.75
Initial Purge Time: 13:52	**Stop Purge Time:** 13:58

Manifold / Canister Details:

Tedlar bag Sample ID: VP-2	**Tedlar bag sample time:** 1400
Laboratory Name: FBT	
Date Delivered to Lab: 7/14/22	**Delivery Method:** HAND

Notes: * GEM stopped working may have got too hot.

Signature: [signature]

PARAMETRIX

Sample Location ID: VP-3

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: YAKIMA LFL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** ROCKY TOP
Sampled by: MB~~AD~~/CPHANG	**Date:** 7/13/22
Air Temperature: 90	**Weather:** Sunny
Depth of Sample 3' (1' INTO LANDFILL)	**Static Pressure:** 0.0 **Barometric Pressure:** 27.99
Purge Volume: 60~l	**Purge Time (550 ml/min):** 7+40 =~50

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	Ø	Ø	1	22.3	Ø
Near Surface	Ø	Ø	1	22.1	Ø
Initial Purge					
Final Reading	0.0	1.6	1	19.6	1

Sampling Information

Canister ID: 8530 1L	**Regulator ID:** 66
Initial Pressure: -28	**Final Pressure:** -4.75
Initial Purge Time: 15:18	**Stop Purge Time:** 15:23

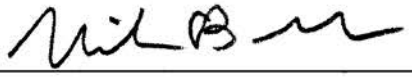
Manifold / Canister Details:

Tedlar bag Sample ID: VP-3 **Tedlar bag sample time:** 15:25

Laboratory Name: FBI

Date Delivered to Lab: 7/14/22	**Delivery Method:** HAND

Notes:

Signature: 

PARAMETRIX

Sample Location ID: VP-4

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LPL	**Project Number:** 553-8472-002
Client: DTC	**Site Address:** ROCKY TOP
Sampled by: M Brady	**Date:** 7/18/2022
Air Temperature: 80	**Weather:** Sunny
Depth of Sample 3.5' (1' INTO [illegible])	**Static Pressure:** 0.0 **Barometric Pressure:** 27.96
Purge Volume: 65 ml	**Purge Time (550 ml/min):** 7+40 ≈ 450sec

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.1	0	20.4	0
Near Surface	0.0	0.1	0	20.3	0
Initial Purge					
Final Reading	0.0	3.5	1.0	17.1	1

Sampling Information

Canister ID: 4179	**Regulator ID:** 60
Initial Pressure: -28.5	**Final Pressure:** -4
Initial Purge Time: 1259	**Stop Purge Time:** 1304

Manifold / Canister Details:

Tedlar bag Sample ID: VP-4	**Tedlar bag sample time:** 1305
Laboratory Name: FBI	
Date Delivered to Lab: 7/19/22	**Delivery Method:** HAND

Notes:

Signature: [signature]

PARAMETRIX

Sample Location ID: VP-5

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LPL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** ROCKY TOP
Sampled by: MBrady	**Date:** 7/18/2022
Air Temperature: 80	**Weather:** Sunny
Depth of Sample 3.5 (1.5' into Landfill)	**Static Pressure:** 0.01 **Barometric Pressure:** 28.04
Purge Volume: 65 ml	**Purge Time (550 ml/min):** 7 + 40 = ~50 sec

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.1	0	20.4	0
Near Surface	0.0	0.1	1	20.5	0
Initial Purge					
Final Reading	0.0	13.6	1	9.7	0

Sampling Information

Canister ID: 8207	**Regulator ID:** 305
Initial Pressure: -27	**Final Pressure:** -4.5
Initial Purge Time: 1331	**Stop Purge Time:** 1336

Manifold / Canister Details:

Tedlar bag Sample ID: VP-5	**Tedlar bag sample time:** 1340
Laboratory Name: FBI	
Date Delivered to Lab: 7/19/22	**Delivery Method:** HAND

Notes:

Signature: MBrady

PARAMETRIX

Sample Location ID: VP-6

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: YAKIMA LPL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** ROCKY TOP
Sampled by: MBrady	**Date:** 7/18/22
Air Temperature: 80	**Weather:** Sunny
Depth of Sample 3.5' (1.5 INTO LANDFILL)	**Static Pressure:** 0.01 **Barometric Pressure:** 28.08
Purge Volume: 65ml	**Purge Time (550 ml/min):** 7+45 = 255 sec

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.1	0	20.8	0
Near Surface	0.0	0.0	0	20.9	0
Initial Purge	0.1	9.6			
Final Reading	0.0	8.5	1	12.4	0

Sampling Information

Canister ID: 2438	**Regulator ID:** 301
Initial Pressure: -28	**Final Pressure:** -4.5
Initial Purge Time: 1358	**Stop Purge Time:** 1403

Manifold / Canister Details:

Tedlar bag Sample ID: VP-6	**Tedlar bag sample time:** 1405
Laboratory Name: FBI	
Date Delivered to Lab: 7/19/22	**Delivery Method:** HAND

Notes:

Signature: MBrady

PARAMETRIX

Sample Location ID: VP-7

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: YAKIMA CPL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** ROCKY TOP
Sampled by: M Brady	**Date:** 7/18/2022
Air Temperature: 85	**Weather:** Sunny
Depth of Sample 3.75' (1' INTO LANDFILL)	**Static Pressure:** 0.02 **Barometric Pressure:** 28.11
Purge Volume: 80ml	**Purge Time (550 ml/min):** 9+40 = ~50sec

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0	0.1	0	20.5	0
Near Surface	0.0	0.0	1	20.7	0
Initial Purge	0				
Final Reading	0.0	10.6	1	9.8	0

Sampling Information

Canister ID: 3252	**Regulator ID:** 62
Initial Pressure: -28	**Final Pressure:** -4.5
Initial Purge Time: 1423	**Stop Purge Time:** 1428

Manifold / Canister Details:

Tedlar bag Sample ID: VP-7	**Tedlar bag sample time:** 1430
Laboratory Name: FBI	
Date Delivered to Lab: 7/19/22	**Delivery Method:** HAND

Notes:

Signature: M Brady

PARAMETRIX

Sample Location ID: VP-8

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LFL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** Rocky Top
Sampled by: M Brady	**Date:** 7/18/22
Air Temperature: 85	**Weather:** Sunny
Depth of Sample 3.75' (1' INTO LANDFILL)	**Static Pressure:** 0.03 **Barometric Pressure:** 28.12
Purge Volume: 80 ml	**Purge Time (550 ml/min):** 9+45 = 255 sec

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.0	0	21.0	0
Near Surface	0	0.0	10	20.9	0
Initial Purge	0.0	9.7	20	10.9	0
Final Reading	0.0	1.1	0	19.7	0

Sampling Information

Canister ID: 3258	**Regulator ID:** 68
Initial Pressure: -28	**Final Pressure:** -5
Initial Purge Time: 1449	**Stop Purge Time:** 1500

Manifold / Canister Details:

Tedlar bag Sample ID: VP-8	**Tedlar bag sample time:** 1505
Laboratory Name: FBI	
Date Delivered to Lab: 7/19/22	**Delivery Method:** HAND

Notes:

Signature: MBrady

PARAMETRIX

Sample Location ID: AMB-1

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LFL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** ROCKY TOP
Sampled by: M BRADY/C PHANG	**Date:** 7/13/22
Air Temperature: 85-90	**Weather:** SUNNY
Depth of Sample —	**Static Pressure:** 0.0 **Barometric Pressure:** 28.05, 27.94
Purge Volume: —	**Purge Time (550 ml/min):** —

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.1	0	20.6	0
Near Surface					
Initial Purge					
Final Reading	0	0	1	21.0	0

Sampling Information

Canister ID: 20549 6L	**Regulator ID:** N/A
Initial Pressure: -30	**Final Pressure:** -8.25
Initial Purge Time: 1013	**Stop Purge Time:** 1638

Manifold / Canister Details:

Tedlar bag Sample ID: N/A **Tedlar bag sample time:** N/A

Laboratory Name: FBI

Date Delivered to Lab: 7/14/22 **Delivery Method:** HAND

Notes:

Signature: [signature]

PARAMETRIX

Sample Location ID: AMB-2

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LPL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** Rocky Top
Sampled by: MBRADY/CPHAM	**Date:** 7/13/22
Air Temperature: 85-90	**Weather:** Sunny
Depth of Sample —	**Static Pressure:** Ø **Barometric Pressure:** 27.91
Purge Volume: —	**Purge Time (550 ml/min):** —

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.1	0	20.4	0
Near Surface					
Initial Purge					
Final Reading AMB	0	0	1	21.1	0

Sampling Information

Canister ID: 20545 6L	**Regulator ID:** N/A
Initial Pressure: -27	**Final Pressure:** ~~-28~~ -10.75
Initial Purge Time: 1037	**Stop Purge Time:** ~~1625~~ 1630

Manifold / Canister Details:

Tedlar bag Sample ID: N/A **Tedlar bag sample time:** N/A

Laboratory Name: FBI

Date Delivered to Lab: 7/14/22	**Delivery Method:** HAND

Notes:

Signature: MLBM

PARAMETRIX

Sample Location ID: AMB-3

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LPL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** Rocky Top
Sampled by: MBRADY / CPHANG	**Date:** 7/13/22
Air Temperature: 85-90	**Weather:** Sunny
Depth of Sample —	**Static Pressure:** Ø **Barometric Pressure:** 27.94
Purge Volume: —	**Purge Time (550 ml/min):** —

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.1	0	20.5	0
Near Surface	0	0	1	21.5	0
Initial Purge					
Final Reading					

Sampling Information

Canister ID: 4071 GL	**Regulator ID:** N/A
Initial Pressure: -27.75	**Final Pressure:** 13
Initial Purge Time: 1050	**Stop Purge Time:** 1619

Manifold / Canister Details:

Tedlar bag Sample ID: N/A	**Tedlar bag sample time:** N/A
Laboratory Name: FBI	
Date Delivered to Lab: 7/14/22	**Delivery Method:** HAND

Notes:

Signature: MBrady

PARAMETRIX

Sample Location ID: AMB-4

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LPL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** Rocky Top
Sampled by: MBRADY/CPHANG	**Date:** 7/13/22
Air Temperature: 85-90	**Weather:** Sunny
Depth of Sample —	**Static Pressure:** Ø **Barometric Pressure:** 27.96
Purge Volume: —	**Purge Time (550 ml/min):** —

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.0	0	20.5	0
Near Surface					
Initial Purge					
Final Reading	0	0	1	21.3	0

Sampling Information

Canister ID: 4073 6L	**Regulator ID:** 08183
Initial Pressure: -29	**Final Pressure:** -2.25
Initial Purge Time: 1107	**Stop Purge Time:** 1625

Manifold / Canister Details:

Tedlar bag Sample ID: N/A	**Tedlar bag sample time:** N/A
Laboratory Name: FBI	
Date Delivered to Lab: 7/14/22	**Delivery Method:** Hand

Notes:

Signature: MBrady

PARAMETRIX

Sample Location ID: AMB-5

LANDFILL GAS SAMPLING FIELD SHEET

Project Name: Yakima LBL	**Project Number:** 553-8472-002
Client: DTG	**Site Address:** Rocky Top
Sampled by:	**Date:** 7/18/22
Air Temperature: 70	**Weather:** Sunny
Depth of Sample —	**Static Pressure:** Ø **Barometric Pressure:** 28.15
Purge Volume: —	**Purge Time (550 ml/min):** —

GEM Readings

Reading	Methane	Carbon Dioxide	Carbon Monoxide	Oxygen	Hydrogen Sulfide
Ambient Air	0.0	0.0	0	20.9	0
Near Surface					
Initial Purge					
Final Reading					

Sampling Information

Canister ID: 37214	**Regulator ID:** 07845
Initial Pressure: -27	**Final Pressure:** -13
Initial Purge Time: 927	**Stop Purge Time:** 1505

Manifold / Canister Details:

Tedlar bag Sample ID: N/A **Tedlar bag sample time:** N/A

Laboratory Name: FBI

Date Delivered to Lab: 7/19/22	**Delivery Method:** HAND

Notes:

Signature: Mike Burn

Location AMB-4 on the northwest slope.

Measuring LFG with the Landtec GEM 5000 at location VP-2

The northeast slope with location VP-8 (near, bottom) and AMB-5 in the distance

Placing bentonite seal onto the temporary vapor probe

Vapor probe after placing cover back over the top.

Example set up using a manifold connected to the GEM and summa canister at location VP-4

Filling a tedlar bag with the peristaltic pump.

Measuring static pressure with the GEM at location VP-6

Appendix B

Laboratory Results

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 26, 2022

Mike Brady, Project Manager
Parametrix
719 2nd Ave, Suite 200
Seattle, WA 98104

Dear Mr Brady:

Included are the results from the testing of material submitted on July 14, 2022 from the DTG-Yakima LPL 553-8472-002, F&BI 207198 project. There are 32 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Ian Sutton
PMX0726R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 14, 2022 by Friedman & Bruya, Inc. from the Parametrix DTG-Yakima LPL 553-8472-002, F&BI 207198 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Parametrix
207198 -01	AMB-1
207198 -02	AMB-2
207198 -03	AMB-3
207198 -04	AMB-4
207198 -05	VP-1
207198 -06	VP-2
207198 -07	VP-3

Samples VP-1, VP-2, and VP-3 were sent to Fremont Analytical for major gasses analysis. The report is enclosed.

Methylene chloride was detected in the TO-15 analysis of samples AMB-1, AMB-2, AMB-3, and AMB-4. The data were flagged as due to laboratory contamination.

The concentration of several analytes exceeded the calibration range of the instrument. The data were flagged accordingly.

The TO-15 calibration standard failed the acceptance criteria for several analytes. The data were flagged accordingly.

Non-petroleum compounds identified in the air phase hydrocarbon (APH) ranges were subtracted per the MA-APH method.

All other quality control requirements were acceptable.

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	AMB-1	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-01 1/1.5
Date Analyzed:	07/20/22	Data File:	072012.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	89	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<110
APH EC9-12 aliphatics	<37
APH EC9-10 aromatics	<37

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	AMB-2	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-02 1/1.9
Date Analyzed:	07/20/22	Data File:	072013.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	88	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<140
APH EC9-12 aliphatics	<47
APH EC9-10 aromatics	<47

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	AMB-3	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-03 1/1.2
Date Analyzed:	07/20/22	Data File:	072014.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	82	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<90
APH EC9-12 aliphatics	<30
APH EC9-10 aromatics	<30

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	AMB-4	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-04 1/1.2
Date Analyzed:	07/20/22	Data File:	072015.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	85	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	110
APH EC9-12 aliphatics	50
APH EC9-10 aromatics	<30

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-1	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-05 1/2100
Date Analyzed:	07/19/22	Data File:	071836.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3
APH EC9-12 aliphatics	110,000
APH EC9-10 aromatics	<52,000

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-1	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-05 1/5200
Date Analyzed:	07/19/22	Data File:	071835.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	88	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	2,600,000

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-2	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-06 1/10
Date Analyzed:	07/19/22	Data File:	071834.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	2,100
APH EC9-12 aliphatics	330
APH EC9-10 aromatics	<250

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-3	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-07 1/11
Date Analyzed:	07/19/22	Data File:	071833.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	107	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	2,700
APH EC9-12 aliphatics	850
APH EC9-10 aromatics	<270

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	Method Blank	Client:	Parametrix
Date Received:	Not Applicable	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	Not Applicable	Lab ID:	02-1651 MB
Date Analyzed:	07/20/22	Data File:	072011.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	80	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<75
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	Method Blank	Client:	Parametrix
Date Received:	Not Applicable	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	Not Applicable	Lab ID:	02-1644 MB
Date Analyzed:	07/18/22	Data File:	071813.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	78	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<75
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	AMB-1	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-01 1/1.5
Date Analyzed:	07/20/22	Data File:	072012.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	90	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.8	<1	1,2-Dichloropropane	<0.35	<0.075
Dichlorodifluoromethane	2.0	0.40	1,4-Dioxane	<0.54	<0.15
Chloromethane	<5.6	<2.7	2,2,4-Trimethylpentane	<7	<1.5
F-114	<3.1	<0.45	Methyl methacrylate	<6.1	<1.5
Vinyl chloride	<0.28	<0.11	Heptane	<6.1	<1.5
1,3-Butadiene	<0.066	<0.03	Bromodichloromethane	<0.1	<0.015
Butane	<7.1	<3	Trichloroethene	<0.16	<0.03
Bromomethane	<5.8	<1.5	cis-1,3-Dichloropropene	<1.4	<0.3
Chloroethane	<4	<1.5	4-Methyl-2-pentanone	<6.1	<1.5
Vinyl bromide	<0.66	<0.15	trans-1,3-Dichloropropene	<0.68	<0.15
Ethanol	<11	<6	Toluene	<28	<7.5
Acrolein	0.20	0.088	1,1,2-Trichloroethane	<0.082	<0.015
Pentane	<8.9	<3	2-Hexanone	<6.1	<1.5
Trichlorofluoromethane	<3.4	<0.6	Tetrachloroethene	<9.6	<1.4
Acetone	16	6.8	Dibromochloromethane	<0.13	<0.015
2-Propanol	<13	<5.2	1,2-Dibromoethane (EDB)	<0.12	<0.015
1,1-Dichloroethene	<0.59	<0.15	Chlorobenzene	<0.69	<0.15
trans-1,2-Dichloroethene	<0.59	<0.15	Ethylbenzene	<0.65	<0.15
Methylene chloride	120 ve ca lc	34 ve ca lc	1,1,2,2-Tetrachloroethane	<0.21	<0.03
t-Butyl alcohol (TBA)	<18	<6	Nonane	<7.9	<1.5
3-Chloropropene	<4.7	<1.5	Isopropylbenzene	<15	<3
CFC-113	<1.1	<0.15	2-Chlorotoluene	<7.8	<1.5
Carbon disulfide	<9.3	<3	Propylbenzene	<7.4	<1.5
Methyl t-butyl ether (MTBE)	<11	<3	4-Ethyltoluene	<7.4	<1.5
Vinyl acetate	<11	<3	m,p-Xylene	<1.3	<0.3
1,1-Dichloroethane	<0.61	<0.15	o-Xylene	<0.65	<0.15
cis-1,2-Dichloroethene	<0.59	<0.15	Styrene	<1.3	<0.3
Hexane	<5.3	<1.5	Bromoform	<3.1	<0.3
Chloroform	<0.073	<0.015	Benzyl chloride	<0.078	<0.015
Ethyl acetate	<11	<3	1,3,5-Trimethylbenzene	<7.4	<1.5
Tetrahydrofuran	<0.88	<0.3	1,2,4-Trimethylbenzene	<7.4	<1.5
2-Butanone (MEK)	<8.8	<3	1,3-Dichlorobenzene	<0.9	<0.15
1,2-Dichloroethane (EDC)	<0.061	<0.015	1,4-Dichlorobenzene	<0.34	<0.057
1,1,1-Trichloroethane	<0.82	<0.15	1,2-Dichlorobenzene	<0.9	<0.15
Carbon tetrachloride	<0.47	<0.075	1,2,4-Trichlorobenzene	<1.1	<0.15
Benzene	<0.48	<0.15	Naphthalene	<0.057 j	<0.011 j
Cyclohexane	<10	<3	Hexachlorobutadiene	<0.32	<0.03

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	AMB-2	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-02 1/1.9
Date Analyzed:	07/20/22	Data File:	072013.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	90	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	<2.3	<1.3	1,2-Dichloropropane	<0.44	<0.095
Dichlorodifluoromethane	2.0	0.41	1,4-Dioxane	<0.68	<0.19
Chloromethane	<7.1	<3.4	2,2,4-Trimethylpentane	<8.9	<1.9
F-114	<4	<0.57	Methyl methacrylate	<7.8	<1.9
Vinyl chloride	<0.28	<0.11	Heptane	<7.8	<1.9
1,3-Butadiene	<0.084	<0.038	Bromodichloromethane	<0.13	<0.019
Butane	<9	<3.8	Trichloroethene	<0.2	<0.038
Bromomethane	<7.4	<1.9	cis-1,3-Dichloropropene	<1.7	<0.38
Chloroethane	<5	<1.9	4-Methyl-2-pentanone	<7.8	<1.9
Vinyl bromide	<0.83	<0.19	trans-1,3-Dichloropropene	<0.86	<0.19
Ethanol	<14	<7.6	Toluene	<36	<9.5
Acrolein	0.31	0.13	1,1,2-Trichloroethane	<0.1	<0.019
Pentane	<11	<3.8	2-Hexanone	<7.8	<1.9
Trichlorofluoromethane	<4.3	<0.76	Tetrachloroethene	<9.6	<1.4
Acetone	19	8.1	Dibromochloromethane	<0.16	<0.019
2-Propanol	<16	<6.6	1,2-Dibromoethane (EDB)	<0.15	<0.019
1,1-Dichloroethene	<0.75	<0.19	Chlorobenzene	<0.87	<0.19
trans-1,2-Dichloroethene	<0.75	<0.19	Ethylbenzene	<0.83	<0.19
Methylene chloride	140 ve ca lc	40 ve ca lc	1,1,2,2-Tetrachloroethane	<0.26	<0.038
t-Butyl alcohol (TBA)	<23	<7.6	Nonane	<10	<1.9
3-Chloropropene	<5.9	<1.9	Isopropylbenzene	<19	<3.8
CFC-113	<1.5	<0.19	2-Chlorotoluene	<9.8	<1.9
Carbon disulfide	<12	<3.8	Propylbenzene	<9.3	<1.9
Methyl t-butyl ether (MTBE)	<14	<3.8	4-Ethyltoluene	<9.3	<1.9
Vinyl acetate	<13	<3.8	m,p-Xylene	<1.7	<0.38
1,1-Dichloroethane	<0.77	<0.19	o-Xylene	<0.83	<0.19
cis-1,2-Dichloroethene	<0.75	<0.19	Styrene	<1.6	<0.38
Hexane	<6.7	<1.9	Bromoform	<3.9	<0.38
Chloroform	<0.093	<0.019	Benzyl chloride	<0.098	<0.019
Ethyl acetate	<14	<3.8	1,3,5-Trimethylbenzene	<9.3	<1.9
Tetrahydrofuran	<1.1	<0.38	1,2,4-Trimethylbenzene	<9.3	<1.9
2-Butanone (MEK)	<11	<3.8	1,3-Dichlorobenzene	<1.1	<0.19
1,2-Dichloroethane (EDC)	<0.077	<0.019	1,4-Dichlorobenzene	<0.43	<0.072
1,1,1-Trichloroethane	<1	<0.19	1,2-Dichlorobenzene	<1.1	<0.19
Carbon tetrachloride	<0.6	<0.095	1,2,4-Trichlorobenzene	<1.4	<0.19
Benzene	<0.61	<0.19	Naphthalene	<0.057 j	<0.011 j
Cyclohexane	<13	<3.8	Hexachlorobutadiene	<0.41	<0.038

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	AMB-3	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-03 1/1.2
Date Analyzed:	07/20/22	Data File:	072014.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	84	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<1.4	<0.84	1,2-Dichloropropane	<0.28	<0.06
Dichlorodifluoromethane	1.2	0.24	1,4-Dioxane	<0.43	<0.12
Chloromethane	<4.5	<2.2	2,2,4-Trimethylpentane	<5.6	<1.2
F-114	<2.5	<0.36	Methyl methacrylate	<4.9	<1.2
Vinyl chloride	<0.28	<0.11	Heptane	<4.9	<1.2
1,3-Butadiene	<0.053	<0.024	Bromodichloromethane	<0.08	<0.012
Butane	<5.7	<2.4	Trichloroethene	<0.13	<0.024
Bromomethane	<4.7	<1.2	cis-1,3-Dichloropropene	<1.1	<0.24
Chloroethane	<3.2	<1.2	4-Methyl-2-pentanone	<4.9	<1.2
Vinyl bromide	<0.52	<0.12	trans-1,3-Dichloropropene	<0.54	<0.12
Ethanol	<9	<4.8	Toluene	<23	<6
Acrolein	0.14	0.062	1,1,2-Trichloroethane	<0.065	<0.012
Pentane	<7.1	<2.4	2-Hexanone	<4.9	<1.2
Trichlorofluoromethane	<2.7	<0.48	Tetrachloroethene	<8.1	<1.2
Acetone	20	8.5	Dibromochloromethane	<0.1	<0.012
2-Propanol	<10	<4.2	1,2-Dibromoethane (EDB)	<0.092	<0.012
1,1-Dichloroethene	<0.48	<0.12	Chlorobenzene	<0.55	<0.12
trans-1,2-Dichloroethene	<0.48	<0.12	Ethylbenzene	<0.52	<0.12
Methylene chloride	160 ve ca lc	45 ve ca lc	1,1,2,2-Tetrachloroethane	<0.16	<0.024
t-Butyl alcohol (TBA)	<15	<4.8	Nonane	<6.3	<1.2
3-Chloropropene	<3.8	<1.2	Isopropylbenzene	<12	<2.4
CFC-113	<0.92	<0.12	2-Chlorotoluene	<6.2	<1.2
Carbon disulfide	<7.5	<2.4	Propylbenzene	<5.9	<1.2
Methyl t-butyl ether (MTBE)	<8.7	<2.4	4-Ethyltoluene	<5.9	<1.2
Vinyl acetate	<8.5	<2.4	m,p-Xylene	<1	<0.24
1,1-Dichloroethane	<0.49	<0.12	o-Xylene	<0.52	<0.12
cis-1,2-Dichloroethene	<0.48	<0.12	Styrene	<1	<0.24
Hexane	5.8	1.7	Bromoform	<2.5	<0.24
Chloroform	<0.059	<0.012	Benzyl chloride	<0.062	<0.012
Ethyl acetate	<8.6	<2.4	1,3,5-Trimethylbenzene	<5.9	<1.2
Tetrahydrofuran	<0.71	<0.24	1,2,4-Trimethylbenzene	<5.9	<1.2
2-Butanone (MEK)	<7.1	<2.4	1,3-Dichlorobenzene	<0.72	<0.12
1,2-Dichloroethane (EDC)	<0.049	<0.012	1,4-Dichlorobenzene	<0.27	<0.046
1,1,1-Trichloroethane	<0.65	<0.12	1,2-Dichlorobenzene	<0.72	<0.12
Carbon tetrachloride	<0.38	<0.06	1,2,4-Trichlorobenzene	<0.89	<0.12
Benzene	<0.38	<0.12	Naphthalene	<0.057 j	<0.011 j
Cyclohexane	<8.3	<2.4	Hexachlorobutadiene	<0.26	<0.024

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	AMB-4	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-04 1/1.2
Date Analyzed:	07/20/22	Data File:	072015.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	87	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	9.0	5.2	1,2-Dichloropropane	<0.28	<0.06
Dichlorodifluoromethane	1.3	0.25	1,4-Dioxane	<0.43	<0.12
Chloromethane	<4.5	<2.2	2,2,4-Trimethylpentane	<5.6	<1.2
F-114	<2.5	<0.36	Methyl methacrylate	<4.9	<1.2
Vinyl chloride	<0.31	<0.12	Heptane	<4.9	<1.2
1,3-Butadiene	<0.053	<0.024	Bromodichloromethane	<0.08	<0.012
Butane	<5.7	<2.4	Trichloroethene	0.13	0.024
Bromomethane	<4.7	<1.2	cis-1,3-Dichloropropene	<1.1	<0.24
Chloroethane	<3.2	<1.2	4-Methyl-2-pentanone	<4.9	<1.2
Vinyl chloride	<0.28	<0.11	trans-1,3-Dichloropropene	<0.54	<0.12
Ethanol	<9	<4.8	Toluene	<23	<6
Acrolein	0.27	0.12	1,1,2-Trichloroethane	<0.065	<0.012
Pentane	<7.1	<2.4	2-Hexanone	<4.9	<1.2
Trichlorofluoromethane	<2.7	<0.48	Tetrachloroethene	<8.1	<1.2
Acetone	14	5.8	Dibromochloromethane	<0.1	<0.012
2-Propanol	<10	<4.2	1,2-Dibromoethane (EDB)	<0.092	<0.012
1,1-Dichloroethene	<0.48	<0.12	Chlorobenzene	<0.55	<0.12
trans-1,2-Dichloroethene	<0.48	<0.12	Ethylbenzene	5.5	1.3
Methylene chloride	110 ve ca lc	32 ve ca lc	1,1,2,2-Tetrachloroethane	<0.16	<0.024
t-Butyl alcohol (TBA)	<15	<4.8	Nonane	<6.3	<1.2
3-Chloropropene	<3.8	<1.2	Isopropylbenzene	<12	<2.4
CFC-113	<0.92	<0.12	2-Chlorotoluene	<6.2	<1.2
Carbon disulfide	<7.5	<2.4	Propylbenzene	<5.9	<1.2
Methyl t-butyl ether (MTBE)	<8.7	<2.4	4-Ethyltoluene	<5.9	<1.2
Vinyl acetate	<8.5	<2.4	m,p-Xylene	2.2	0.50
1,1-Dichloroethane	<0.49	<0.12	o-Xylene	1.3	0.30
cis-1,2-Dichloroethene	<0.48	<0.12	Styrene	<1	<0.24
Hexane	4.9	1.4	Bromoform	<2.5	<0.24
Chloroform	<0.059	<0.012	Benzyl chloride	<0.062	<0.012
Ethyl acetate	<8.6	<2.4	1,3,5-Trimethylbenzene	<5.9	<1.2
Tetrahydrofuran	0.98	0.33	1,2,4-Trimethylbenzene	<5.9	<1.2
2-Butanone (MEK)	<7.1	<2.4	1,3-Dichlorobenzene	<0.72	<0.12
1,2-Dichloroethane (EDC)	<0.049	<0.012	1,4-Dichlorobenzene	<0.27	<0.046
1,1,1-Trichloroethane	<0.65	<0.12	1,2-Dichlorobenzene	<0.72	<0.12
Carbon tetrachloride	<0.38	<0.06	1,2,4-Trichlorobenzene	<0.89	<0.12
Benzene	10	3.2	Naphthalene	0.97	0.18
Cyclohexane	<8.3	<2.4	Hexachlorobutadiene	<0.26	<0.024

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-1	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-05 1/2100
Date Analyzed:	07/19/22	Data File:	071836.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	320,000 ve	190,000 ve	1,2-Dichloropropane	<490	<100
Dichlorodifluoromethane	<2,100	<420	1,4-Dioxane	6,200	1,700
Chloromethane	360,000 ve	170,000 ve	2,2,4-Trimethylpentane	<9,800	<2,100
F-114	<4,400	<630	Methyl methacrylate	<8,600	<2,100
Vinyl chloride	<540	<210	Heptane	58,000	14,000
1,3-Butadiene	<93	<42	Bromodichloromethane	<140	<21
Butane	120,000 ve	51,000 ve	Trichloroethene	<230	<42
Bromomethane	<8,200	<2,100	cis-1,3-Dichloropropene	<1,900	<420
Chloroethane	9,500	3,600	4-Methyl-2-pentanone	<8,600	<2,100
Vinyl bromide	<920	<210	trans-1,3-Dichloropropene	<950	<210
Ethanol	32,000	17,000	Toluene	170,000 ve	46,000 ve
Acrolein	<240	<100	1,1,2-Trichloroethane	<110	<21
Pentane	110,000 ca ve	37,000 ca ve	2-Hexanone	<8,600	<2,100
Trichlorofluoromethane	<4,700	<840	Tetrachloroethene	<14,000	<2,100
Acetone	350,000 ve	150,000 ve	Dibromochloromethane	<180	<21
2-Propanol	<18,000	<7,300	1,2-Dibromoethane (EDB)	<160	<21
1,1-Dichloroethene	<830	<210	Chlorobenzene	<970	<210
trans-1,2-Dichloroethene	<830	<210	Ethylbenzene	100,000	24,000
Methylene chloride	<73,000	<21,000	1,1,2,2-Tetrachloroethane	<290	<42
t-Butyl alcohol (TBA)	<25,000	<8,400	Nonane	21,000	4,000
3-Chloropropene	<6,600 ca	<2,100 ca	Isopropylbenzene	32,000	6,600
CFC-113	<1,600	<210	2-Chlorotoluene	<11,000	<2,100
Carbon disulfide	<13,000	<4,200	Propylbenzene	<10,000	<2,100
Methyl t-butyl ether (MTBE)	<15,000	<4,200	4-Ethyltoluene	<10,000	<2,100
Vinyl acetate	<15,000 ca	<4,200 ca	m,p-Xylene	19,000	4,400
1,1-Dichloroethane	<850	<210	o-Xylene	7,100	1,600
cis-1,2-Dichloroethene	<830	<210	Styrene	4,800	1,100
Hexane	78,000	22,000	Bromoform	<4,300	<420
Chloroform	<100	<21	Benzyl chloride	<110	<21
Ethyl acetate	<15,000	<4,200	1,3,5-Trimethylbenzene	<10,000	<2,100
Tetrahydrofuran	170,000 ve	57,000 ve	1,2,4-Trimethylbenzene	<10,000	<2,100
2-Butanone (MEK)	130,000 ve	45,000 ve	1,3-Dichlorobenzene	<1,300	<210
1,2-Dichloroethane (EDC)	1,200	290	1,4-Dichlorobenzene	<480	<80
1,1,1-Trichloroethane	<1,100	<210	1,2-Dichlorobenzene	<1,300	<210
Carbon tetrachloride	<660	<100	1,2,4-Trichlorobenzene	<1,600	<210
Benzene	410,000 ve	130,000 ve	Naphthalene	<550	<100
Cyclohexane	<14,000	<4,200	Hexachlorobutadiene	<450	<42

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-1	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-05 1/5200
Date Analyzed:	07/19/22	Data File:	071835.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	90	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	400,000 ve	240,000 ve	1,2-Dichloropropane	<1,200	<260
Dichlorodifluoromethane	<5,100	<1,000	1,4-Dioxane	7,100	2,000
Chloromethane	470,000 ve	230,000 ve	2,2,4-Trimethylpentane	<24,000	<5,200
F-114	<11,000	<1,600	Methyl methacrylate	<21,000	<5,200
Vinyl chloride	<1,300	<520	Heptane	67,000	16,000
1,3-Butadiene	<230	<100	Bromodichloromethane	<350	<52
Butane	160,000	67,000	Trichloroethene	<560	<100
Bromomethane	<20,000	<5,200	cis-1,3-Dichloropropene	<4,700	<1,000
Chloroethane	<14,000	<5,200	4-Methyl-2-pentanone	<21,000	<5,200
Vinyl bromide	<2,300	<520	trans-1,3-Dichloropropene	<2,400	<520
Ethanol	<39,000	<21,000	Toluene	220,000	58,000
Acrolein	<600	<260	1,1,2-Trichloroethane	<280	<52
Pentane	130,000 ca	45,000 ca	2-Hexanone	<21,000	<5,200
Trichlorofluoromethane	<12,000	<2,100	Tetrachloroethene	<35,000	<5,200
Acetone	450,000 ve	190,000 ve	Dibromochloromethane	<440	<52
2-Propanol	<45,000	<18,000	1,2-Dibromoethane (EDB)	<400	<52
1,1-Dichloroethene	<2,100	<520	Chlorobenzene	<2,400	<520
trans-1,2-Dichloroethene	<2,100	<520	Ethylbenzene	120,000	29,000
Methylene chloride	<180,000	<52,000	1,1,2,2-Tetrachloroethane	<710	<100
t-Butyl alcohol (TBA)	<63,000	<21,000	Nonane	<27,000	<5,200
3-Chloropropene	<16,000 ca	<5,200 ca	Isopropylbenzene	<51,000	<10,000
CFC-113	<4,000	<520	2-Chlorotoluene	<27,000	<5,200
Carbon disulfide	<32,000	<10,000	Propylbenzene	<26,000	<5,200
Methyl t-butyl ether (MTBE)	<37,000	<10,000	4-Ethyltoluene	<26,000	<5,200
Vinyl acetate	<37,000 ca	<10,000 ca	m,p-Xylene	23,000	5,300
1,1-Dichloroethane	<2,100	<520	o-Xylene	8,200	1,900
cis-1,2-Dichloroethene	<2,100	<520	Styrene	6,800	1,600
Hexane	95,000	27,000	Bromoform	<11,000	<1,000
Chloroform	<250	<52	Benzyl chloride	<270	<52
Ethyl acetate	<37,000	<10,000	1,3,5-Trimethylbenzene	<26,000	<5,200
Tetrahydrofuran	210,000	70,000	1,2,4-Trimethylbenzene	<26,000	<5,200
2-Butanone (MEK)	160,000	54,000	1,3-Dichlorobenzene	<3,100	<520
1,2-Dichloroethane (EDC)	1,400	340	1,4-Dichlorobenzene	<1,200	<200
1,1,1-Trichloroethane	<2,800	<520	1,2-Dichlorobenzene	<3,100	<520
Carbon tetrachloride	<1,600	<260	1,2,4-Trichlorobenzene	<3,900	<520
Benzene	530,000 ve	170,000 ve	Naphthalene	<1,400	<260
Cyclohexane	<36,000	<10,000	Hexachlorobutadiene	<1,100	<100

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-2	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-06 1/10
Date Analyzed:	07/19/22	Data File:	071834.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	120	68	1,2-Dichloropropane	<2.3	<0.5
Dichlorodifluoromethane	<9.9	<2	1,4-Dioxane	4.1	1.1
Chloromethane	62	30	2,2,4-Trimethylpentane	<47	<10
F-114	<21	<3	Methyl methacrylate	<41	<10
Vinyl chloride	<2.6	<1	Heptane	<41	<10
1,3-Butadiene	27	12	Bromodichloromethane	<0.67	<0.1
Butane	<48	<20	Trichloroethene	<1.1	<0.2
Bromomethane	<39	<10	cis-1,3-Dichloropropene	<9.1	<2
Chloroethane	<26	<10	4-Methyl-2-pentanone	170	41
Vinyl bromide	<4.4	<1	trans-1,3-Dichloropropene	<4.5	<1
Ethanol	<75	<40	Toluene	<190	<50
Acrolein	8.7	3.8	1,1,2-Trichloroethane	<0.55	<0.1
Pentane	<59 ca	<20 ca	2-Hexanone	<41	<10
Trichlorofluoromethane	<22	<4	Tetrachloroethene	<68	<10
Acetone	210	89	Dibromochloromethane	<0.85	<0.1
2-Propanol	<86	<35	1,2-Dibromoethane (EDB)	<0.77	<0.1
1,1-Dichloroethene	<4	<1	Chlorobenzene	<4.6	<1
trans-1,2-Dichloroethene	<4	<1	Ethylbenzene	24	5.4
Methylene chloride	<350	<100	1,1,2,2-Tetrachloroethane	<1.4	<0.2
t-Butyl alcohol (TBA)	<120	<40	Nonane	<52	<10
3-Chloropropene	<31 ca	<10 ca	Isopropylbenzene	<98	<20
CFC-113	<7.7	<1	2-Chlorotoluene	<52	<10
Carbon disulfide	<62	<20	Propylbenzene	<49	<10
Methyl t-butyl ether (MTBE)	<72	<20	4-Ethyltoluene	<49	<10
Vinyl acetate	<70 ca	<20 ca	m,p-Xylene	23	5.2
1,1-Dichloroethane	<4	<1	o-Xylene	8.6	2.0
cis-1,2-Dichloroethene	<4	<1	Styrene	53	12
Hexane	<35	<10	Bromoform	<21	<2
Chloroform	0.54	0.11	Benzyl chloride	<0.52	<0.1
Ethyl acetate	<72	<20	1,3,5-Trimethylbenzene	<49	<10
Tetrahydrofuran	18	6.2	1,2,4-Trimethylbenzene	<49	<10
2-Butanone (MEK)	<59	<20	1,3-Dichlorobenzene	19	3.1
1,2-Dichloroethane (EDC)	<0.4	<0.1	1,4-Dichlorobenzene	15	2.5
1,1,1-Trichloroethane	<5.5	<1	1,2-Dichlorobenzene	<6	<1
Carbon tetrachloride	<3.1	<0.5	1,2,4-Trichlorobenzene	<7.4	<1
Benzene	260	81	Naphthalene	<2.6	<0.5
Cyclohexane	<69	<20	Hexachlorobutadiene	<2.1	<0.2

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-3	Client:	Parametrix
Date Received:	07/14/22	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	07/13/22	Lab ID:	207198-07 1/11
Date Analyzed:	07/19/22	Data File:	071833.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	109	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	16	9.3	1,2-Dichloropropane	<2.5	<0.55
Dichlorodifluoromethane	23	4.6	1,4-Dioxane	4.7	1.3
Chloromethane	<41	<20	2,2,4-Trimethylpentane	<51	<11
F-114	<23	<3.3	Methyl methacrylate	<45	<11
Vinyl chloride	<2.8	<1.1	Heptane	<45	<11
1,3-Butadiene	6.4	2.9	Bromodichloromethane	<0.74	<0.11
Butane	<52	<22	Trichloroethene	3.2	0.59
Bromomethane	<43	<11	cis-1,3-Dichloropropene	<10	<2.2
Chloroethane	<29	<11	4-Methyl-2-pentanone	84	21
Vinyl bromide	<4.8	<1.1	trans-1,3-Dichloropropene	<5	<1.1
Ethanol	<83	<44	Toluene	<210	<55
Acrolein	3.8	1.7	1,1,2-Trichloroethane	<0.6	<0.11
Pentane	<65 ca	<22 ca	2-Hexanone	<45	<11
Trichlorofluoromethane	38	6.7	Tetrachloroethene	140	20
Acetone	440 ve	180 ve	Dibromochloromethane	<0.94	<0.11
2-Propanol	<95	<38	1,2-Dibromoethane (EDB)	<0.85	<0.11
1,1-Dichloroethene	<4.4	<1.1	Chlorobenzene	<5.1	<1.1
trans-1,2-Dichloroethene	<4.4	<1.1	Ethylbenzene	64	15
Methylene chloride	<380	<110	1,1,2,2-Tetrachloroethane	<1.5	<0.22
t-Butyl alcohol (TBA)	160	54	Nonane	<58	<11
3-Chloropropene	<34 ca	<11 ca	Isopropylbenzene	<110	<22
CFC-113	<8.4	<1.1	2-Chlorotoluene	<57	<11
Carbon disulfide	<69	<22	Propylbenzene	<54	<11
Methyl t-butyl ether (MTBE)	<79	<22	4-Ethyltoluene	<54	<11
Vinyl acetate	<77 ca	<22 ca	m,p-Xylene	31	7.0
1,1-Dichloroethane	<4.5	<1.1	o-Xylene	18	4.1
cis-1,2-Dichloroethene	<4.4	<1.1	Styrene	2,100 ve	490 ve
Hexane	<39	<11	Bromoform	<23	<2.2
Chloroform	5.2	1.1	Benzyl chloride	<3.1	<0.6
Ethyl acetate	<79	<22	1,3,5-Trimethylbenzene	<54	<11
Tetrahydrofuran	<6.5	<2.2	1,2,4-Trimethylbenzene	<54	<11
2-Butanone (MEK)	<65	<22	1,3-Dichlorobenzene	21	3.5
1,2-Dichloroethane (EDC)	<0.45	<0.11	1,4-Dichlorobenzene	18	3.0
1,1,1-Trichloroethane	<6	<1.1	1,2-Dichlorobenzene	<6.6	<1.1
Carbon tetrachloride	<3.5	<0.55	1,2,4-Trichlorobenzene	<8.2	<1.1
Benzene	340	110	Naphthalene	<2.9	<0.55
Cyclohexane	<76	<22	Hexachlorobutadiene	<2.3	<0.22

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Parametrix
Date Received:	Not Applicable	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	Not Applicable	Lab ID:	02-1651 MB
Date Analyzed:	07/20/22	Data File:	072011.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	82	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	<1.2	<0.7	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	<0.99	<0.2	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.14	<0.055	Heptane	<4.1	<1
1,3-Butadiene	<0.044	<0.02	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<4.1	<1
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5	<4	Toluene	<19	<5
Acrolein	<0.11	<0.05	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<4.8	<0.71
Acetone	<4.8	<2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<0.77	<0.1	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	<0.049	<0.01	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	<0.31	<0.05	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	<0.029 j	<0.0055 j
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Parametrix
Date Received:	Not Applicable	Project:	DTG-Yakima LPL 553-8472-002
Date Collected:	Not Applicable	Lab ID:	02-1644 MB
Date Analyzed:	07/18/22	Data File:	071813.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	80	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	ug/m3	ppbv
Propene	<1.2	<0.7	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	<0.99	<0.2	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.26	<0.1	Heptane	<4.1	<1
1,3-Butadiene	<0.044	<0.02	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<4.1	<1
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5	<4	Toluene	<19	<5
Acrolein	<0.11	<0.05	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<6.8	<1
Acetone	<4.8	<2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<0.77	<0.1	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	<0.049	<0.01	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	<0.31	<0.05	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	<0.26	<0.05
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: 207298-06 1/6.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
APH EC5-8 aliphatics	ug/m3	1,500	1,500	0
APH EC9-12 aliphatics	ug/m3	530	510	4
APH EC9-10 aromatics	ug/m3	<170	<170	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	67	97	70-130
APH EC9-12 aliphatics	ug/m3	67	124	70-130
APH EC9-10 aromatics	ug/m3	67	98	70-130

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: 207097-01 1/6.3 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
APH EC5-8 aliphatics	ug/m3	540	520	4
APH EC9-12 aliphatics	ug/m3	220	360	48 vo
APH EC9-10 aromatics	ug/m3	<160	<160	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	67	97	70-130
APH EC9-12 aliphatics	ug/m3	67	125	70-130
APH EC9-10 aromatics	ug/m3	67	100	70-130

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 207298-06 1/6.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Propene	ug/m3	37	39	5
Dichlorodifluoromethane	ug/m3	7.8	7.8	0
Chloromethane	ug/m3	<25	<25	nm
F-114	ug/m3	<14	<14	nm
Vinyl chloride	ug/m3	<1.7	<1.7	nm
1,3-Butadiene	ug/m3	<0.3	<0.3	nm
Butane	ug/m3	<32	<32	nm
Bromomethane	ug/m3	<26	<26	nm
Chloroethane	ug/m3	<18	<18	nm
Vinyl bromide	ug/m3	<2.9	<2.9	nm
Ethanol	ug/m3	<50	<50	nm
Acrolein	ug/m3	40	40	0
Pentane	ug/m3	<40	<40	nm
Trichlorofluoromethane	ug/m3	28	27	4
Acetone	ug/m3	340	340	0
2-Propanol	ug/m3	<58	<58	nm
1,1-Dichloroethene	ug/m3	<2.7	<2.7	nm
trans-1,2-Dichloroethene	ug/m3	<2.7	<2.7	nm
Methylene chloride	ug/m3	<230	<230	nm
t-Butyl alcohol (TBA)	ug/m3	140	130	7
3-Chloropropene	ug/m3	<21	<21	nm
CFC-113	ug/m3	<5.1	<5.1	nm
Carbon disulfide	ug/m3	<42	<42	nm
Methyl t-butyl ether (MTBE)	ug/m3	<48	<48	nm
Vinyl acetate	ug/m3	<47	<47	nm
1,1-Dichloroethane	ug/m3	<2.7	<2.7	nm
cis-1,2-Dichloroethene	ug/m3	<2.7	<2.7	nm
Hexane	ug/m3	<24	<24	nm
Chloroform	ug/m3	11	10	10
Ethyl acetate	ug/m3	<48	<48	nm
Tetrahydrofuran	ug/m3	<4	<4	nm
2-Butanone (MEK)	ug/m3	<40	<40	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.27	<0.27	nm
1,1,1-Trichloroethane	ug/m3	<3.7	<3.7	nm
Carbon tetrachloride	ug/m3	<2.1	<2.1	nm
Benzene	ug/m3	180	180	0
Cyclohexane	ug/m3	<46	<46	nm
1,2-Dichloropropane	ug/m3	<1.5	<1.5	nm
1,4-Dioxane	ug/m3	<2.4	<2.4	nm
2,2,4-Trimethylpentane	ug/m3	<31	<31	nm

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 207298-06 1/6.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Methyl methacrylate	ug/m3	<27	<27	nm
Heptane	ug/m3	<27	<27	nm
Bromodichloromethane	ug/m3	0.54	0.54	0
Trichloroethene	ug/m3	<0.72	<0.72	nm
cis-1,3-Dichloropropene	ug/m3	<6.1	<6.1	nm
4-Methyl-2-pentanone	ug/m3	54	43	23
trans-1,3-Dichloropropene	ug/m3	<3	<3	nm
Toluene	ug/m3	<130	<130	nm
1,1,2-Trichloroethane	ug/m3	<0.37	<0.37	nm
2-Hexanone	ug/m3	<27	<27	nm
Tetrachloroethene	ug/m3	<45	<45	nm
Dibromochloromethane	ug/m3	<0.57	<0.57	nm
1,2-Dibromoethane (EDB)	ug/m3	<0.51	<0.51	nm
Chlorobenzene	ug/m3	<3.1	<3.1	nm
Ethylbenzene	ug/m3	5.7	5.6	2
1,1,2,2-Tetrachloroethane	ug/m3	<0.92	<0.92	nm
Nonane	ug/m3	<35	<35	nm
Isopropylbenzene	ug/m3	<66	<66	nm
2-Chlorotoluene	ug/m3	<35	<35	nm
Propylbenzene	ug/m3	<33	<33	nm
4-Ethyltoluene	ug/m3	<33	<33	nm
m,p-Xylene	ug/m3	11	11	0
o-Xylene	ug/m3	4.5	4.5	0
Styrene	ug/m3	120	120	0
Bromoform	ug/m3	<14	<14	nm
Benzyl chloride	ug/m3	<0.35	<0.35	nm
1,3,5-Trimethylbenzene	ug/m3	<33	<33	nm
1,2,4-Trimethylbenzene	ug/m3	<33	<33	nm
1,3-Dichlorobenzene	ug/m3	11	11	0
1,4-Dichlorobenzene	ug/m3	3.7	3.7	0
1,2-Dichlorobenzene	ug/m3	<4	<4	nm
1,2,4-Trichlorobenzene	ug/m3	<5	<5	nm
Naphthalene	ug/m3	<1.8	<1.8	nm
Hexachlorobutadiene	ug/m3	<1.4	<1.4	nm

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Propene	ug/m3	23	82	70-130
Dichlorodifluoromethane	ug/m3	67	107	70-130
Chloromethane	ug/m3	28	100	70-130
F-114	ug/m3	94	103	70-130
Vinyl chloride	ug/m3	35	92	70-130
1,3-Butadiene	ug/m3	30	86	70-130
Butane	ug/m3	32	80	70-130
Bromomethane	ug/m3	52	110	70-130
Chloroethane	ug/m3	36	96	70-130
Vinyl bromide	ug/m3	59	106	70-130
Ethanol	ug/m3	25	87	70-130
Acrolein	ug/m3	31	78	70-130
Pentane	ug/m3	40	71	70-130
Trichlorofluoromethane	ug/m3	76	102	70-130
Acetone	ug/m3	32	93	70-130
2-Propanol	ug/m3	33	79	70-130
1,1-Dichloroethene	ug/m3	54	100	70-130
trans-1,2-Dichloroethene	ug/m3	54	95	70-130
Methylene chloride	ug/m3	94	111	70-130
t-Butyl alcohol (TBA)	ug/m3	41	85	70-130
3-Chloropropene	ug/m3	42	75	70-130
CFC-113	ug/m3	100	110	70-130
Carbon disulfide	ug/m3	42	105	70-130
Methyl t-butyl ether (MTBE)	ug/m3	49	81	70-130
Vinyl acetate	ug/m3	48	71	70-130
1,1-Dichloroethane	ug/m3	55	95	70-130
cis-1,2-Dichloroethene	ug/m3	54	94	70-130
Hexane	ug/m3	48	81	70-130
Chloroform	ug/m3	66	101	70-130
Ethyl acetate	ug/m3	49	93	70-130
Tetrahydrofuran	ug/m3	40	80	70-130
2-Butanone (MEK)	ug/m3	40	90	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	95	70-130
1,1,1-Trichloroethane	ug/m3	74	101	70-130
Carbon tetrachloride	ug/m3	85	104	70-130
Benzene	ug/m3	43	88	70-130
Cyclohexane	ug/m3	46	80	70-130
1,2-Dichloropropane	ug/m3	62	104	70-130
1,4-Dioxane	ug/m3	49	97	70-130
2,2,4-Trimethylpentane	ug/m3	63	96	70-130

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl methacrylate	ug/m3	55	91	70-130
Heptane	ug/m3	55	87	70-130
Bromodichloromethane	ug/m3	90	114	70-130
Trichloroethene	ug/m3	73	107	70-130
cis-1,3-Dichloropropene	ug/m3	61	104	70-130
4-Methyl-2-pentanone	ug/m3	55	111	70-130
trans-1,3-Dichloropropene	ug/m3	61	102	70-130
Toluene	ug/m3	51	99	70-130
1,1,2-Trichloroethane	ug/m3	74	115	70-130
2-Hexanone	ug/m3	55	95	70-130
Tetrachloroethene	ug/m3	92	117	70-130
Dibromochloromethane	ug/m3	120	125	70-130
1,2-Dibromoethane (EDB)	ug/m3	100	109	70-130
Chlorobenzene	ug/m3	62	109	70-130
Ethylbenzene	ug/m3	59	88	70-130
1,1,2,2-Tetrachloroethane	ug/m3	93	110	70-130
Nonane	ug/m3	71	83	70-130
Isopropylbenzene	ug/m3	66	106	70-130
2-Chlorotoluene	ug/m3	70	102	70-130
Propylbenzene	ug/m3	66	97	70-130
4-Ethyltoluene	ug/m3	66	91	70-130
m,p-Xylene	ug/m3	120	95	70-130
o-Xylene	ug/m3	59	99	70-130
Styrene	ug/m3	58	93	70-130
Bromoform	ug/m3	140	117	70-130
Benzyl chloride	ug/m3	70	108	70-130
1,3,5-Trimethylbenzene	ug/m3	66	97	70-130
1,2,4-Trimethylbenzene	ug/m3	66	89	70-130
1,3-Dichlorobenzene	ug/m3	81	119	70-130
1,4-Dichlorobenzene	ug/m3	81	115	70-130
1,2-Dichlorobenzene	ug/m3	81	119	70-130
1,2,4-Trichlorobenzene	ug/m3	100	125	70-130
Naphthalene	ug/m3	71	117	70-130
Hexachlorobutadiene	ug/m3	140	115	70-130

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 207097-01 1/6.3 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Propene	ug/m3	<7.6	<7.6	nm
Dichlorodifluoromethane	ug/m3	<6.2	<6.2	nm
Chloromethane	ug/m3	<23	<23	nm
F-114	ug/m3	<13	<13	nm
Vinyl chloride	ug/m3	<1.6	<1.6	nm
1,3-Butadiene	ug/m3	<0.28	<0.28	nm
Butane	ug/m3	<30	<30	nm
Bromomethane	ug/m3	<24	<24	nm
Chloroethane	ug/m3	<17	<17	nm
Vinyl bromide	ug/m3	<2.8	<2.8	nm
Ethanol	ug/m3	270	250	8
Acrolein	ug/m3	0.79	<0.72	nm
Pentane	ug/m3	<37	<37	nm
Trichlorofluoromethane	ug/m3	<14	<14	nm
Acetone	ug/m3	100	57	55 vo
2-Propanol	ug/m3	200	200	0
1,1-Dichloroethene	ug/m3	<2.5	<2.5	nm
trans-1,2-Dichloroethene	ug/m3	<2.5	<2.5	nm
Methylene chloride	ug/m3	270	<220	nm
t-Butyl alcohol (TBA)	ug/m3	<76	<76	nm
3-Chloropropene	ug/m3	<20	<20	nm
CFC-113	ug/m3	<4.8	<4.8	nm
Carbon disulfide	ug/m3	<39	<39	nm
Methyl t-butyl ether (MTBE)	ug/m3	<45	<45	nm
Vinyl acetate	ug/m3	<44	<44	nm
1,1-Dichloroethane	ug/m3	<2.5	<2.5	nm
cis-1,2-Dichloroethene	ug/m3	<2.5	<2.5	nm
Hexane	ug/m3	<22	<22	nm
Chloroform	ug/m3	2.9	2.9	0
Ethyl acetate	ug/m3	<45	<45	nm
Tetrahydrofuran	ug/m3	<3.7	<3.7	nm
2-Butanone (MEK)	ug/m3	<37	<37	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.25	<0.25	nm
1,1,1-Trichloroethane	ug/m3	<3.4	<3.4	nm
Carbon tetrachloride	ug/m3	<2	<2	nm
Benzene	ug/m3	<2	<2	nm
Cyclohexane	ug/m3	<43	<43	nm
1,2-Dichloropropane	ug/m3	<1.5	<1.5	nm
1,4-Dioxane	ug/m3	<2.3	<2.3	nm
2,2,4-Trimethylpentane	ug/m3	<29	<29	nm

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 207097-01 1/6.3 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Methyl methacrylate	ug/m3	<26	<26	nm
Heptane	ug/m3	<26	<26	nm
Bromodichloromethane	ug/m3	<0.42	<0.42	nm
Trichloroethene	ug/m3	<0.68	<0.68	nm
cis-1,3-Dichloropropene	ug/m3	<5.7	<5.7	nm
4-Methyl-2-pentanone	ug/m3	<26	<26	nm
trans-1,3-Dichloropropene	ug/m3	<2.9	<2.9	nm
Toluene	ug/m3	<120	<120	nm
1,1,2-Trichloroethane	ug/m3	<0.34	<0.34	nm
2-Hexanone	ug/m3	<26	<26	nm
Tetrachloroethene	ug/m3	<43	<43	nm
Dibromochloromethane	ug/m3	<0.54	<0.54	nm
1,2-Dibromoethane (EDB)	ug/m3	<0.48	<0.48	nm
Chlorobenzene	ug/m3	<2.9	<2.9	nm
Ethylbenzene	ug/m3	<2.7	<2.7	nm
1,1,2,2-Tetrachloroethane	ug/m3	<0.86	<0.86	nm
Nonane	ug/m3	<33	<33	nm
Isopropylbenzene	ug/m3	<62	<62	nm
2-Chlorotoluene	ug/m3	<33	<33	nm
Propylbenzene	ug/m3	<31	<31	nm
4-Ethyltoluene	ug/m3	<31	<31	nm
m,p-Xylene	ug/m3	<5.5	<5.5	nm
o-Xylene	ug/m3	<2.7	<2.7	nm
Styrene	ug/m3	<5.4	<5.4	nm
Bromoform	ug/m3	<13	<13	nm
Benzyl chloride	ug/m3	<0.33	<0.33	nm
1,3,5-Trimethylbenzene	ug/m3	<31	<31	nm
1,2,4-Trimethylbenzene	ug/m3	<31	<31	nm
1,3-Dichlorobenzene	ug/m3	<3.8	<3.8	nm
1,4-Dichlorobenzene	ug/m3	<1.4	<1.4	nm
1,2-Dichlorobenzene	ug/m3	<3.8	<3.8	nm
1,2,4-Trichlorobenzene	ug/m3	<4.7	<4.7	nm
Naphthalene	ug/m3	<1.7	<1.7	nm
Hexachlorobutadiene	ug/m3	<1.3	<1.3	nm

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Propene	ug/m3	23	77	70-130
Dichlorodifluoromethane	ug/m3	67	96	70-130
Chloromethane	ug/m3	28	86	70-130
F-114	ug/m3	94	93	70-130
Vinyl chloride	ug/m3	35	79	70-130
1,3-Butadiene	ug/m3	30	79	70-130
Butane	ug/m3	32	77	70-130
Bromomethane	ug/m3	52	99	70-130
Chloroethane	ug/m3	36	90	70-130
Vinyl bromide	ug/m3	59	96	70-130
Ethanol	ug/m3	25	78	70-130
Acrolein	ug/m3	31	89	70-130
Pentane	ug/m3	40	69 vo	70-130
Trichlorofluoromethane	ug/m3	76	95	70-130
Acetone	ug/m3	32	81	70-130
2-Propanol	ug/m3	33	72	70-130
1,1-Dichloroethene	ug/m3	54	89	70-130
trans-1,2-Dichloroethene	ug/m3	54	85	70-130
Methylene chloride	ug/m3	94	86	70-130
t-Butyl alcohol (TBA)	ug/m3	41	75	70-130
3-Chloropropene	ug/m3	42	67 vo	70-130
CFC-113	ug/m3	100	98	70-130
Carbon disulfide	ug/m3	42	85	70-130
Methyl t-butyl ether (MTBE)	ug/m3	49	72	70-130
Vinyl acetate	ug/m3	48	68 vo	70-130
1,1-Dichloroethane	ug/m3	55	87	70-130
cis-1,2-Dichloroethene	ug/m3	54	84	70-130
Hexane	ug/m3	48	70	70-130
Chloroform	ug/m3	66	90	70-130
Ethyl acetate	ug/m3	49	80	70-130
Tetrahydrofuran	ug/m3	40	73	70-130
2-Butanone (MEK)	ug/m3	40	82	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	87	70-130
1,1,1-Trichloroethane	ug/m3	74	91	70-130
Carbon tetrachloride	ug/m3	85	91	70-130
Benzene	ug/m3	43	80	70-130
Cyclohexane	ug/m3	46	77	70-130
1,2-Dichloropropane	ug/m3	62	93	70-130
1,4-Dioxane	ug/m3	49	85	70-130
2,2,4-Trimethylpentane	ug/m3	63	80	70-130

Date of Report: 07/26/22
Date Received: 07/14/22
Project: DTG-Yakima LPL 553-8472-002, F&BI 207198

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl methacrylate	ug/m3	55	82	70-130
Heptane	ug/m3	55	76	70-130
Bromodichloromethane	ug/m3	90	100	70-130
Trichloroethene	ug/m3	73	94	70-130
cis-1,3-Dichloropropene	ug/m3	61	96	70-130
4-Methyl-2-pentanone	ug/m3	55	104	70-130
trans-1,3-Dichloropropene	ug/m3	61	90	70-130
Toluene	ug/m3	51	90	70-130
1,1,2-Trichloroethane	ug/m3	74	102	70-130
2-Hexanone	ug/m3	55	83	70-130
Tetrachloroethene	ug/m3	92	104	70-130
Dibromochloromethane	ug/m3	120	109	70-130
1,2-Dibromoethane (EDB)	ug/m3	100	97	70-130
Chlorobenzene	ug/m3	62	96	70-130
Ethylbenzene	ug/m3	59	78	70-130
1,1,2,2-Tetrachloroethane	ug/m3	93	96	70-130
Nonane	ug/m3	71	72	70-130
Isopropylbenzene	ug/m3	66	96	70-130
2-Chlorotoluene	ug/m3	70	90	70-130
Propylbenzene	ug/m3	66	87	70-130
4-Ethyltoluene	ug/m3	66	77	70-130
m,p-Xylene	ug/m3	120	84	70-130
o-Xylene	ug/m3	59	86	70-130
Styrene	ug/m3	58	84	70-130
Bromoform	ug/m3	140	101	70-130
Benzyl chloride	ug/m3	70	92	70-130
1,3,5-Trimethylbenzene	ug/m3	66	80	70-130
1,2,4-Trimethylbenzene	ug/m3	66	80	70-130
1,3-Dichlorobenzene	ug/m3	81	100	70-130
1,4-Dichlorobenzene	ug/m3	81	96	70-130
1,2-Dichlorobenzene	ug/m3	81	100	70-130
1,2,4-Trichlorobenzene	ug/m3	100	103	70-130
Naphthalene	ug/m3	71	99	70-130
Hexachlorobutadiene	ug/m3	140	102	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

207198

SAMPLE CHAIN OF CUSTODY

7/14/22
~~7/13/22~~

Page # 1 of 1

Report To MIKE BRADY, IAN SUTTON
Company PARAMETRIX
Address 719 2ND AVE STE 200
City, State, ZIP SEATTLE, WA
Phone 206 519-5781 Email mbrady@parametrix.com

SAMPLERS (signature)

PROJECT NAME & ADDRESS: DTG - YAKIMA CPL
PO # 553-8472-002

NOTES:

INVOICE TO

TURNAROUND TIME
- [X] Standard
- [ ] RUSH by 7/26

Rush charges authorized by: per MB

SAMPLE DISPOSAL 7/20
- [X] Default: Clean after 3 days
- [ ] Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	EPA-3C (Tedlar)	Notes
AMB-1	01	20549	06605	(IA) / SG	7/13/22	-30	1013	-8.25	1638	X			X			
AMB-2	02	20545	08182	(IA) / SG	7/13/22	-27	1037	-14.75	1630	X			X			
AMB-3	03	40711	07871	(IA) / SG	7/13/22	-27.75	1050	-13	1619	X			X			
AMB-4	04	40713	08183	(IA) / SG	7/13/22	-28	1107	-12.25	1625	X			X			
VP-1	05	8209	50	IA / (SG)	7/13/22	-28	1228	-4.5	1234	X			X		X	Also Tedlar CH4 4.2
VP-2	06	2301	67	IA / (SG)	7/13/22	-29	13:52	-4.75	13:58	X			X		X	" "
VP-3	07	8530	66	IA / (SG)	7/13/22	-28	1518	-4.75	1523	X			X		X	" "
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: MBrady	MIKE BRADY	Parametrix	7/14/22	1007
Received by:	Eric Flower	F&B	7/14/22	1007
Relinquished by:				
Received by:		Samples received at 21 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
(206) 283-5044

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

RE: 207198
Work Order Number: 2207207

July 20, 2022

Attention Michael Erdahl:

Fremont Analytical, Inc. received 3 sample(s) on 7/14/2022 for the analyses presented in the following report.

Major Gases by EPA Method 3C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *07/20/2022*

CLIENT: Friedman & Bruya
Project: 207198
Work Order: 2207207

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2207207-001	VP-1	07/13/2022 12:34 PM	07/14/2022 5:33 PM
2207207-002	VP-2	07/13/2022 1:58 PM	07/14/2022 5:33 PM
2207207-003	VP-3	07/13/2022 3:23 PM	07/14/2022 5:33 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2207207**
Date: **7/20/2022**

CLIENT: Friedman & Bruya
Project: 207198

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Major gases are reported as % ratio of the Major Gases analyzed (Carbon dioxide, Carbon Monoxide, Methane, Nitrogen, Oxygen and Hydrogen).

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS). The LCS is processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Note: The estimated BTU calculation is based off of the methane result.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2207207**
Date Reported: **7/20/2022**

CLIENT: Friedman & Bruya
Project: 207198

Lab ID: 2207207-001 **Collection Date:** 7/13/2022 12:34:00 PM
Client Sample ID: **VP-1** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R76943		Analyst: YC
Carbon Dioxide	23.2	0.0500		%	1	7/15/2022 3:21:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/15/2022 3:21:00 PM
Methane	1.59	0.0500		%	1	7/15/2022 3:21:00 PM
Nitrogen	73.3	0.0500		%	1	7/15/2022 3:21:00 PM
Oxygen	1.83	0.0500		%	1	7/15/2022 3:21:00 PM
Hydrogen	ND	0.0500		%	1	7/15/2022 3:21:00 PM
BTU	16.1			BTU/ft^3	1	7/15/2022 3:21:00 PM

Lab ID: 2207207-002 **Collection Date:** 7/13/2022 1:58:00 PM
Client Sample ID: **VP-2** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R76943		Analyst: YC
Carbon Dioxide	0.600	0.0500		%	1	7/15/2022 3:33:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/15/2022 3:33:00 PM
Methane	ND	0.0500		%	1	7/15/2022 3:33:00 PM
Nitrogen	76.5	0.0500		%	1	7/15/2022 3:33:00 PM
Oxygen	22.9	0.0500		%	1	7/15/2022 3:33:00 PM
Hydrogen	ND	0.0500		%	1	7/15/2022 3:33:00 PM
BTU	ND			BTU/ft^3	1	7/15/2022 3:33:00 PM

Analytical Report

Work Order: **2207207**
Date Reported: **7/20/2022**

CLIENT: Friedman & Bruya
Project: 207198

Lab ID: 2207207-003
Client Sample ID: **VP-3**
Collection Date: 7/13/2022 3:23:00 PM
Matrix: Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R76943		Analyst: YC
Carbon Dioxide	1.34	0.0500		%	1	7/15/2022 3:45:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/15/2022 3:45:00 PM
Methane	ND	0.0500		%	1	7/15/2022 3:45:00 PM
Nitrogen	76.5	0.0500		%	1	7/15/2022 3:45:00 PM
Oxygen	22.2	0.0500		%	1	7/15/2022 3:45:00 PM
Hydrogen	ND	0.0500		%	1	7/15/2022 3:45:00 PM
BTU	ND			BTU/ft^3	1	7/15/2022 3:45:00 PM

Work Order: 2207207
CLIENT: Friedman & Bruya
Project: 207198

QC SUMMARY REPORT

Major Gases by EPA Method 3C

Sample ID: **LCS-R76943** SampType: **LCS** Units: **%** Prep Date: **7/15/2022** RunNo: **76943**
Client ID: **LCSW** Batch ID: **R76943** Analysis Date: **7/15/2022** SeqNo: **1579793**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	100	0.0500	100.0	0	100	70	130				
Carbon Monoxide	100	0.0500	100.0	0	100	70	130				
Methane	100	0.0500	100.0	0	100	70	130				
Nitrogen	99.7	0.0500	100.0	0	99.7	70	130				
Oxygen	99.2	0.0500	100.0	0	99.2	70	130				
Hydrogen	95.9	0.0500	100.0	0	95.9	70	130				

Sample ID: **2207207-001AREP** SampType: **REP** Units: **%-dry** Prep Date: **7/15/2022** RunNo: **76943**
Client ID: **VP-1** Batch ID: **R76943** Analysis Date: **7/15/2022** SeqNo: **1579789**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	23.1	0.0500						23.23	0.641	30	
Carbon Monoxide	ND	0.0500						0		30	
Methane	1.52	0.0500						1.595	4.72	30	
Nitrogen	73.6	0.0500						73.35	0.351	30	
Oxygen	1.79	0.0500						1.829	1.98	30	
Hydrogen	ND	0.0500						0		30	
BTU	15.4							16.13	4.72		

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2207207
Logged by:	Elisabeth Samoray	Date Received:	7/14/2022 5:33:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present ☐
2.	How was the sample delivered?	Client				

Log In

3.	Coolers are present?	Yes	☐	No	☑	NA ☐
		Sample is air				
4.	Shipping container/cooler in good condition?	Yes	☑	No	☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No	☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes	☐	No	☑	NA ☐
		Sample is air				
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☐	No	☐	NA ☑
8.	Sample(s) in proper container(s)?	Yes	☑	No	☐	
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐	
10.	Are samples properly preserved?	Yes	☑	No	☐	
11.	Was preservative added to bottles?	Yes	☐	No	☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes	☐	No	☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No	☐	
14.	Does paperwork match bottle labels?	Yes	☑	No	☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐	
16.	Is it clear what analyses were requested?	Yes	☑	No	☐	
17.	Were all holding times able to be met?	Yes	☑	No	☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

19. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

207207

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO.	PO #
207198	C-250

REMARKS

Page # 1 of 1

TURNAROUND TIME

☒ Standard TAT

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH	Major Anions 1C						Notes
VP-1		7/13/22	1234	vapor	1				x						
VP-2		↓	1358	↓	1				x						
VP-3		↓	1523	↓	1				x						

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	7/14/22	1130
Received by:	Yeyi Chen	Yeyi Chen	Fremont	7/14/22	17:33
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 26, 2022

Mike Brady, Project Manager
Parametrix
719 2nd Ave, Suite 200
Seattle, WA 98104

Dear Mr Brady:

Included are the results from the testing of material submitted on July 19, 2022 from the DTG-Yakima LPL 353-8472-002, F&BI 207298 project. There are 21 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Ian Sutton
PMX0726R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 19, 2022 by Friedman & Bruya, Inc. from the Parametrix DTG-Yakima LPL 353-8472-002, F&BI 207298 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Parametrix
207298 -01	AMB-5
207298 -02	VP-4
207298 -03	VP-5
207298 -04	VP-6
207298 -05	VP-7
207298 -06	VP-8

The VP samples were sent to Fremont Analytical for major gasses analysis. The report will be forwarded upon receipt.

Non-petroleum compounds identified in the air phase hydrocarbon (APH) ranges were subtracted per the MA-APH method.

Methylene chloride was detected in the TO-15 analysis of samples AMB-5 and VP-6. The data were flagged as due to laboratory contamination.

The concentration of several analytes exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	AMB-5	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-01 1/1.9
Date Analyzed:	07/20/22	Data File:	072017.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	81	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<140
APH EC9-12 aliphatics	<47
APH EC9-10 aromatics	<47

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-4	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-02 1/9.6
Date Analyzed:	07/21/22	Data File:	072022.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	5,100
APH EC9-12 aliphatics	710
APH EC9-10 aromatics	<240

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-5	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-03 1/10
Date Analyzed:	07/21/22	Data File:	072023.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	83	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	2,000
APH EC9-12 aliphatics	300
APH EC9-10 aromatics	<250

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-6	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-04 1/6.6
Date Analyzed:	07/21/22	Data File:	072021.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	2,000
APH EC9-12 aliphatics	640
APH EC9-10 aromatics	<160

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-7	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-05 1/6.3
Date Analyzed:	07/21/22	Data File:	072020.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	87	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	1,600
APH EC9-12 aliphatics	360
APH EC9-10 aromatics	<160

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	VP-8	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-06 1/6.7
Date Analyzed:	07/20/22	Data File:	072018.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	99	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	1,500
APH EC9-12 aliphatics	530
APH EC9-10 aromatics	<170

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	Method Blank	Client:	Parametrix
Date Received:	Not Applicable	Project:	353-8472-002, F&BI 207298
Date Collected:	Not Applicable	Lab ID:	02-1651 MB
Date Analyzed:	07/20/22	Data File:	072011.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	80	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<75
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	AMB-5	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-01 1/1.9
Date Analyzed:	07/20/22	Data File:	072017.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	82	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<2.3	<1.3	1,2-Dichloropropane	<0.44	<0.095
Dichlorodifluoromethane	2.1	0.43	1,4-Dioxane	<0.68	<0.19
Chloromethane	<7.1	<3.4	2,2,4-Trimethylpentane	<8.9	<1.9
F-114	<4	<0.57	Methyl methacrylate	<7.8	<1.9
Vinyl chloride	<0.28	<0.11	Heptane	<7.8	<1.9
1,3-Butadiene	<0.084	<0.038	Bromodichloromethane	<0.13	<0.019
Butane	<9	<3.8	Trichloroethene	<0.2	<0.038
Bromomethane	<7.4	<1.9	cis-1,3-Dichloropropene	<1.7	<0.38
Chloroethane	<5	<1.9	4-Methyl-2-pentanone	<7.8	<1.9
Vinyl bromide	<0.83	<0.19	trans-1,3-Dichloropropene	<0.86	<0.19
Ethanol	<14	<7.6	Toluene	<36	<9.5
Acrolein	0.23	0.099	1,1,2-Trichloroethane	<0.1	<0.019
Pentane	<11	<3.8	2-Hexanone	<7.8	<1.9
Trichlorofluoromethane	<4.3	<0.76	Tetrachloroethene	<9.6	<1.4
Acetone	14	6.1	Dibromochloromethane	<0.16	<0.019
2-Propanol	<16	<6.6	1,2-Dibromoethane (EDB)	<0.15	<0.019
1,1-Dichloroethene	<0.75	<0.19	Chlorobenzene	<0.87	<0.19
trans-1,2-Dichloroethene	<0.75	<0.19	Ethylbenzene	<0.83	<0.19
Methylene chloride	160 ve lc	47 ve lc	1,1,2,2-Tetrachloroethane	<0.26	<0.038
t-Butyl alcohol (TBA)	<23	<7.6	Nonane	<10	<1.9
3-Chloropropene	<5.9	<1.9	Isopropylbenzene	<19	<3.8
CFC-113	<1.5	<0.19	2-Chlorotoluene	<9.8	<1.9
Carbon disulfide	<12	<3.8	Propylbenzene	<9.3	<1.9
Methyl t-butyl ether (MTBE)	<14	<3.8	4-Ethyltoluene	<9.3	<1.9
Vinyl acetate	<13	<3.8	m,p-Xylene	<1.7	<0.38
1,1-Dichloroethane	<0.77	<0.19	o-Xylene	<0.83	<0.19
cis-1,2-Dichloroethene	<0.75	<0.19	Styrene	<1.6	<0.38
Hexane	<6.7	<1.9	Bromoform	<3.9	<0.38
Chloroform	<0.093	<0.019	Benzyl chloride	<0.098	<0.019
Ethyl acetate	<14	<3.8	1,3,5-Trimethylbenzene	<9.3	<1.9
Tetrahydrofuran	<1.1	<0.38	1,2,4-Trimethylbenzene	<9.3	<1.9
2-Butanone (MEK)	<11	<3.8	1,3-Dichlorobenzene	<1.1	<0.19
1,2-Dichloroethane (EDC)	<0.077	<0.019	1,4-Dichlorobenzene	<0.43	<0.072
1,1,1-Trichloroethane	<1	<0.19	1,2-Dichlorobenzene	<1.1	<0.19
Carbon tetrachloride	<0.6	<0.095	1,2,4-Trichlorobenzene	<1.4	<0.19
Benzene	<0.61	<0.19	Naphthalene	<0.057	<0.011
Cyclohexane	<13	<3.8	Hexachlorobutadiene	<0.41	<0.038

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-4	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-02 1/9.6
Date Analyzed:	07/21/22	Data File:	072022.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	28	16	1,2-Dichloropropane	<2.2	<0.48
Dichlorodifluoromethane	18	3.6	1,4-Dioxane	<3.5	<0.96
Chloromethane	<36	<17	2,2,4-Trimethylpentane	<45	<9.6
F-114	<20	<2.9	Methyl methacrylate	<39	<9.6
Vinyl chloride	<2.5	<0.96	Heptane	<39	<9.6
1,3-Butadiene	<0.42	<0.19	Bromodichloromethane	2.3	0.34
Butane	<46	<19	Trichloroethene	<1	<0.19
Bromomethane	<37	<9.6	cis-1,3-Dichloropropene	<8.7	<1.9
Chloroethane	<25	<9.6	4-Methyl-2-pentanone	<39	<9.6
Vinyl bromide	<4.2	<0.96	trans-1,3-Dichloropropene	<4.4	<0.96
Ethanol	<72	<38	Toluene	<180	<48
Acrolein	3.4	1.5	1,1,2-Trichloroethane	<0.52	<0.096
Pentane	2,100 ve	720 ve	2-Hexanone	<39	<9.6
Trichlorofluoromethane	220	39	Tetrachloroethene	<65	<9.6
Acetone	78	33	Dibromochloromethane	<0.82	<0.096
2-Propanol	<83	<34	1,2-Dibromoethane (EDB)	<0.74	<0.096
1,1-Dichloroethene	<3.8	<0.96	Chlorobenzene	<4.4	<0.96
trans-1,2-Dichloroethene	<3.8	<0.96	Ethylbenzene	<4.2	<0.96
Methylene chloride	<330	<96	1,1,2,2-Tetrachloroethane	<1.3	<0.19
t-Butyl alcohol (TBA)	<120	<38	Nonane	<50	<9.6
3-Chloropropene	<30	<9.6	Isopropylbenzene	<94	<19
CFC-113	<7.4	<0.96	2-Chlorotoluene	<50	<9.6
Carbon disulfide	<60	<19	Propylbenzene	<47	<9.6
Methyl t-butyl ether (MTBE)	<69	<19	4-Ethyltoluene	<47	<9.6
Vinyl acetate	<68	<19	m,p-Xylene	13	3.0
1,1-Dichloroethane	<3.9	<0.96	o-Xylene	6.0	1.4
cis-1,2-Dichloroethene	<3.8	<0.96	Styrene	<8.2	<1.9
Hexane	<34	<9.6	Bromoform	<20	<1.9
Chloroform	170	35	Benzyl chloride	<0.5	<0.096
Ethyl acetate	<69	<19	1,3,5-Trimethylbenzene	<47	<9.6
Tetrahydrofuran	<5.7	<1.9	1,2,4-Trimethylbenzene	<47	<9.6
2-Butanone (MEK)	<57	<19	1,3-Dichlorobenzene	6.3	1.1
1,2-Dichloroethane (EDC)	<0.39	<0.096	1,4-Dichlorobenzene	4.9	0.82
1,1,1-Trichloroethane	<5.2	<0.96	1,2-Dichlorobenzene	<5.8	<0.96
Carbon tetrachloride	9.1	1.4	1,2,4-Trichlorobenzene	<7.1	<0.96
Benzene	20	6.4	Naphthalene	<2.4	<0.46
Cyclohexane	<66	<19	Hexachlorobutadiene	<2	<0.19

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-5	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-03 1/10
Date Analyzed:	07/21/22	Data File:	072023.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	84	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<12	<7	1,2-Dichloropropane	<2.3	<0.5
Dichlorodifluoromethane	150	30	1,4-Dioxane	<3.6	<1
Chloromethane	<37	<18	2,2,4-Trimethylpentane	<47	<10
F-114	<21	<3	Methyl methacrylate	<41	<10
Vinyl chloride	<2.6	<1	Heptane	<41	<10
1,3-Butadiene	<0.44	<0.2	Bromodichloromethane	1.9	0.29
Butane	440 ve	180 ve	Trichloroethene	1.2	0.22
Bromomethane	<39	<10	cis-1,3-Dichloropropene	<9.1	<2
Chloroethane	<26	<10	4-Methyl-2-pentanone	<41	<10
Vinyl bromide	<4.4	<1	trans-1,3-Dichloropropene	<4.5	<1
Ethanol	<75	<40	Toluene	<190	<50
Acrolein	3.5	1.5	1,1,2-Trichloroethane	<0.55	<0.1
Pentane	<59	<20	2-Hexanone	<41	<10
Trichlorofluoromethane	1,200 ve	210 ve	Tetrachloroethene	<68	<10
Acetone	70	29	Dibromochloromethane	1.0	0.12
2-Propanol	<86	<35	1,2-Dibromoethane (EDB)	<0.77	<0.1
1,1-Dichloroethene	<4	<1	Chlorobenzene	<4.6	<1
trans-1,2-Dichloroethene	<4	<1	Ethylbenzene	<4.3	<1
Methylene chloride	<350	<100	1,1,2,2-Tetrachloroethane	<1.4	<0.2
t-Butyl alcohol (TBA)	<120	<40	Nonane	<52	<10
3-Chloropropene	<31	<10	Isopropylbenzene	<98	<20
CFC-113	<7.7	<1	2-Chlorotoluene	<52	<10
Carbon disulfide	<62	<20	Propylbenzene	<49	<10
Methyl t-butyl ether (MTBE)	<72	<20	4-Ethyltoluene	<49	<10
Vinyl acetate	<70	<20	m,p-Xylene	<8.7	<2
1,1-Dichloroethane	<4	<1	o-Xylene	<4.3	<1
cis-1,2-Dichloroethene	<4	<1	Styrene	<8.5	<2
Hexane	<35	<10	Bromoform	<21	<2
Chloroform	8.7	1.8	Benzyl chloride	<0.52	<0.1
Ethyl acetate	<72	<20	1,3,5-Trimethylbenzene	<49	<10
Tetrahydrofuran	<5.9	<2	1,2,4-Trimethylbenzene	<49	<10
2-Butanone (MEK)	<59	<20	1,3-Dichlorobenzene	11	1.9
1,2-Dichloroethane (EDC)	<0.4	<0.1	1,4-Dichlorobenzene	5.4	0.89
1,1,1-Trichloroethane	<5.5	<1	1,2-Dichlorobenzene	<6	<1
Carbon tetrachloride	<3.1	<0.5	1,2,4-Trichlorobenzene	<7.4	<1
Benzene	22	7.0	Naphthalene	<2.4	<0.46
Cyclohexane	<69	<20	Hexachlorobutadiene	<2.1	<0.2

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-6	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-04 1/6.6
Date Analyzed:	07/21/22	Data File:	072021.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	<8	<4.6	1,2-Dichloropropane	<1.5	<0.33
Dichlorodifluoromethane	18	3.7	1,4-Dioxane	<2.4	<0.66
Chloromethane	<25	<12	2,2,4-Trimethylpentane	<31	<6.6
F-114	<14	<2	Methyl methacrylate	<27	<6.6
Vinyl chloride	<1.7	<0.66	Heptane	<27	<6.6
1,3-Butadiene	<0.29	<0.13	Bromodichloromethane	<0.44	<0.066
Butane	120	49	Trichloroethene	1.1	0.20
Bromomethane	<26	<6.6	cis-1,3-Dichloropropene	<6	<1.3
Chloroethane	<17	<6.6	4-Methyl-2-pentanone	45	11
Vinyl bromide	<2.9	<0.66	trans-1,3-Dichloropropene	<3	<0.66
Ethanol	<50	<26	Toluene	<120	<33
Acrolein	10	4.4	1,1,2-Trichloroethane	<0.36	<0.066
Pentane	<39	<13	2-Hexanone	<27	<6.6
Trichlorofluoromethane	39	7.0	Tetrachloroethene	<45	<6.6
Acetone	200	84	Dibromochloromethane	<0.56	<0.066
2-Propanol	<57	<23	1,2-Dibromoethane (EDB)	<0.51	<0.066
1,1-Dichloroethene	<2.6	<0.66	Chlorobenzene	<3	<0.66
trans-1,2-Dichloroethene	<2.6	<0.66	Ethylbenzene	4.7	1.1
Methylene chloride	410 ve lc	120 ve lc	1,1,2,2-Tetrachloroethane	<0.91	<0.13
t-Butyl alcohol (TBA)	<80	<26	Nonane	<35	<6.6
3-Chloropropene	<21	<6.6	Isopropylbenzene	<65	<13
CFC-113	<5.1	<0.66	2-Chlorotoluene	<34	<6.6
Carbon disulfide	<41	<13	Propylbenzene	<32	<6.6
Methyl t-butyl ether (MTBE)	<48	<13	4-Ethyltoluene	<32	<6.6
Vinyl acetate	<46	<13	m,p-Xylene	14	3.2
1,1-Dichloroethane	<2.7	<0.66	o-Xylene	6.3	1.4
cis-1,2-Dichloroethene	<2.6	<0.66	Styrene	8.5	2.0
Hexane	26	7.5	Bromoform	<14	<1.3
Chloroform	25	5.1	Benzyl chloride	<0.34	<0.066
Ethyl acetate	<48	<13	1,3,5-Trimethylbenzene	<32	<6.6
Tetrahydrofuran	<3.9	<1.3	1,2,4-Trimethylbenzene	<32	<6.6
2-Butanone (MEK)	<39	<13	1,3-Dichlorobenzene	5.1	0.84
1,2-Dichloroethane (EDC)	<0.27	<0.066	1,4-Dichlorobenzene	6.2	1.0
1,1,1-Trichloroethane	<3.6	<0.66	1,2-Dichlorobenzene	<4	<0.66
Carbon tetrachloride	<2.1	<0.33	1,2,4-Trichlorobenzene	<4.9	<0.66
Benzene	150	46	Naphthalene	2.0	0.39
Cyclohexane	<45	<13	Hexachlorobutadiene	<1.4	<0.13

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-7	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-05 1/6.3
Date Analyzed:	07/21/22	Data File:	072020.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	88	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	22	13	1,2-Dichloropropane	<1.5	<0.31
Dichlorodifluoromethane	320	64	1,4-Dioxane	<2.3	<0.63
Chloromethane	<23	<11	2,2,4-Trimethylpentane	<29	<6.3
F-114	<13	<1.9	Methyl methacrylate	<26	<6.3
Vinyl chloride	<1.6	<0.63	Heptane	<26	<6.3
1,3-Butadiene	4.6	2.1	Bromodichloromethane	0.59	0.088
Butane	<30	<13	Trichloroethene	1.5	0.28
Bromomethane	<24	<6.3	cis-1,3-Dichloropropene	<5.7	<1.3
Chloroethane	<17	<6.3	4-Methyl-2-pentanone	35	8.4
Vinyl bromide	<2.8	<0.63	trans-1,3-Dichloropropene	<2.9	<0.63
Ethanol	<47	<25	Toluene	<120	<31
Acrolein	10	4.5	1,1,2-Trichloroethane	<0.34	<0.063
Pentane	<37	<13	2-Hexanone	<26	<6.3
Trichlorofluoromethane	40	7.2	Tetrachloroethene	60	8.8
Acetone	190	81	Dibromochloromethane	<0.54	<0.063
2-Propanol	<54	<22	1,2-Dibromoethane (EDB)	<0.48	<0.063
1,1-Dichloroethene	<2.5	<0.63	Chlorobenzene	<2.9	<0.63
trans-1,2-Dichloroethene	<2.5	<0.63	Ethylbenzene	2.8	0.65
Methylene chloride	<220	<63	1,1,2,2-Tetrachloroethane	<0.86	<0.13
t-Butyl alcohol (TBA)	<76	<25	Nonane	<33	<6.3
3-Chloropropene	<20	<6.3	Isopropylbenzene	<62	<13
CFC-113	<4.8	<0.63	2-Chlorotoluene	<33	<6.3
Carbon disulfide	<39	<13	Propylbenzene	<31	<6.3
Methyl t-butyl ether (MTBE)	<45	<13	4-Ethyltoluene	<31	<6.3
Vinyl acetate	<44	<13	m,p-Xylene	8.4	1.9
1,1-Dichloroethane	<2.5	<0.63	o-Xylene	3.6	0.83
cis-1,2-Dichloroethene	<2.5	<0.63	Styrene	17	4.1
Hexane	<22	<6.3	Bromoform	<13	<1.3
Chloroform	7.7	1.6	Benzyl chloride	<0.33	<0.063
Ethyl acetate	<45	<13	1,3,5-Trimethylbenzene	<31	<6.3
Tetrahydrofuran	<3.7	<1.3	1,2,4-Trimethylbenzene	<31	<6.3
2-Butanone (MEK)	<37	<13	1,3-Dichlorobenzene	9.5	1.6
1,2-Dichloroethane (EDC)	<0.25	<0.063	1,4-Dichlorobenzene	5.1	0.85
1,1,1-Trichloroethane	<3.4	<0.63	1,2-Dichlorobenzene	5.0	0.84
Carbon tetrachloride	<2	<0.31	1,2,4-Trichlorobenzene	<4.7	<0.63
Benzene	50	15	Naphthalene	<1.7	<0.31
Cyclohexane	<43	<13	Hexachlorobutadiene	<1.3	<0.13

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-8	Client:	Parametrix
Date Received:	07/19/22	Project:	353-8472-002, F&BI 207298
Date Collected:	07/18/22	Lab ID:	207298-06 1/6.7
Date Analyzed:	07/20/22	Data File:	072018.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	100	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Propene	37	21	1,2-Dichloropropane	<1.5	<0.33
Dichlorodifluoromethane	7.8	1.6	1,4-Dioxane	<2.4	<0.67
Chloromethane	<25	<12	2,2,4-Trimethylpentane	<31	<6.7
F-114	<14	<2	Methyl methacrylate	<27	<6.7
Vinyl chloride	<1.7	<0.67	Heptane	<27	<6.7
1,3-Butadiene	<0.3	<0.13	Bromodichloromethane	0.54	0.080
Butane	<32	<13	Trichloroethene	<0.72	<0.13
Bromomethane	<26	<6.7	cis-1,3-Dichloropropene	<6.1	<1.3
Chloroethane	<18	<6.7	4-Methyl-2-pentanone	54	13
Vinyl bromide	<2.9	<0.67	trans-1,3-Dichloropropene	<3	<0.67
Ethanol	<50	<27	Toluene	<130	<33
Acrolein	40	18	1,1,2-Trichloroethane	<0.37	<0.067
Pentane	<40	<13	2-Hexanone	<27	<6.7
Trichlorofluoromethane	28	5.0	Tetrachloroethene	<45	<6.7
Acetone	340 ve	150 ve	Dibromochloromethane	<0.57	<0.067
2-Propanol	<58	<23	1,2-Dibromoethane (EDB)	<0.51	<0.067
1,1-Dichloroethene	<2.7	<0.67	Chlorobenzene	<3.1	<0.67
trans-1,2-Dichloroethene	<2.7	<0.67	Ethylbenzene	5.7	1.3
Methylene chloride	<230	<67	1,1,2,2-Tetrachloroethane	<0.92	<0.13
t-Butyl alcohol (TBA)	140	45	Nonane	<35	<6.7
3-Chloropropene	<21	<6.7	Isopropylbenzene	<66	<13
CFC-113	<5.1	<0.67	2-Chlorotoluene	<35	<6.7
Carbon disulfide	<42	<13	Propylbenzene	<33	<6.7
Methyl t-butyl ether (MTBE)	<48	<13	4-Ethyltoluene	<33	<6.7
Vinyl acetate	<47	<13	m,p-Xylene	11	2.6
1,1-Dichloroethane	<2.7	<0.67	o-Xylene	4.5	1.0
cis-1,2-Dichloroethene	<2.7	<0.67	Styrene	120	27
Hexane	<24	<6.7	Bromoform	<14	<1.3
Chloroform	11	2.2	Benzyl chloride	<0.35	<0.067
Ethyl acetate	<48	<13	1,3,5-Trimethylbenzene	<33	<6.7
Tetrahydrofuran	<4	<1.3	1,2,4-Trimethylbenzene	<33	<6.7
2-Butanone (MEK)	<40	<13	1,3-Dichlorobenzene	11	1.8
1,2-Dichloroethane (EDC)	<0.27	<0.067	1,4-Dichlorobenzene	3.7	0.61
1,1,1-Trichloroethane	<3.7	<0.67	1,2-Dichlorobenzene	<4	<0.67
Carbon tetrachloride	<2.1	<0.33	1,2,4-Trichlorobenzene	<5	<0.67
Benzene	180	57	Naphthalene	<1.8	<0.33
Cyclohexane	<46	<13	Hexachlorobutadiene	<1.4	<0.13

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Parametrix
Date Received:	Not Applicable	Project:	353-8472-002, F&BI 207298
Date Collected:	Not Applicable	Lab ID:	02-1651 MB
Date Analyzed:	07/20/22	Data File:	072011.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	82	70	130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Propene	<1.2	<0.7	1,2-Dichloropropane	<0.23	<0.05
Dichlorodifluoromethane	<0.99	<0.2	1,4-Dioxane	<0.36	<0.1
Chloromethane	<3.7	<1.8	2,2,4-Trimethylpentane	<4.7	<1
F-114	<2.1	<0.3	Methyl methacrylate	<4.1	<1
Vinyl chloride	<0.15	<0.058	Heptane	<4.1	<1
1,3-Butadiene	<0.044	<0.02	Bromodichloromethane	<0.067	<0.01
Butane	<4.8	<2	Trichloroethene	<0.11	<0.02
Bromomethane	<3.9	<1	cis-1,3-Dichloropropene	<0.91	<0.2
Chloroethane	<2.6	<1	4-Methyl-2-pentanone	<4.1	<1
Vinyl bromide	<0.44	<0.1	trans-1,3-Dichloropropene	<0.45	<0.1
Ethanol	<7.5	<4	Toluene	<19	<5
Acrolein	<0.11	<0.05	1,1,2-Trichloroethane	<0.055	<0.01
Pentane	<5.9	<2	2-Hexanone	<4.1	<1
Trichlorofluoromethane	<2.2	<0.4	Tetrachloroethene	<5.1	<0.74
Acetone	<4.8	<2	Dibromochloromethane	<0.085	<0.01
2-Propanol	<8.6	<3.5	1,2-Dibromoethane (EDB)	<0.077	<0.01
1,1-Dichloroethene	<0.4	<0.1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Methylene chloride	<35	<10	1,1,2,2-Tetrachloroethane	<0.14	<0.02
t-Butyl alcohol (TBA)	<12	<4	Nonane	<5.2	<1
3-Chloropropene	<3.1	<1	Isopropylbenzene	<9.8	<2
CFC-113	<0.77	<0.1	2-Chlorotoluene	<5.2	<1
Carbon disulfide	<6.2	<2	Propylbenzene	<4.9	<1
Methyl t-butyl ether (MTBE)	<7.2	<2	4-Ethyltoluene	<4.9	<1
Vinyl acetate	<7	<2	m,p-Xylene	<0.87	<0.2
1,1-Dichloroethane	<0.4	<0.1	o-Xylene	<0.43	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	Styrene	<0.85	<0.2
Hexane	<3.5	<1	Bromoform	<2.1	<0.2
Chloroform	<0.049	<0.01	Benzyl chloride	<0.052	<0.01
Ethyl acetate	<7.2	<2	1,3,5-Trimethylbenzene	<4.9	<1
Tetrahydrofuran	<0.59	<0.2	1,2,4-Trimethylbenzene	<4.9	<1
2-Butanone (MEK)	<5.9	<2	1,3-Dichlorobenzene	<0.6	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	1,4-Dichlorobenzene	<0.23	<0.038
1,1,1-Trichloroethane	<0.55	<0.1	1,2-Dichlorobenzene	<0.6	<0.1
Carbon tetrachloride	<0.31	<0.05	1,2,4-Trichlorobenzene	<0.74	<0.1
Benzene	<0.32	<0.1	Naphthalene	<0.03 j	<0.0058 j
Cyclohexane	<6.9	<2	Hexachlorobutadiene	<0.21	<0.02

Date of Report: 07/26/22
Date Received: 07/19/22
Project: DTG-Yakima LPL 353-8472-002, F&BI 207298

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD MA-APH

Laboratory Code: 207298-06 1/6.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
APH EC5-8 aliphatics	ug/m3	1,500	1,500	0
APH EC9-12 aliphatics	ug/m3	530	510	4
APH EC9-10 aromatics	ug/m3	<170	<170	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	67	97	70-130
APH EC9-12 aliphatics	ug/m3	67	124	70-130
APH EC9-10 aromatics	ug/m3	67	98	70-130

Date of Report: 07/26/22
Date Received: 07/19/22
Project: DTG-Yakima LPL 353-8472-002, F&BI 207298

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 207298-06 1/6.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Propene	ug/m3	37	39	5
Dichlorodifluoromethane	ug/m3	7.8	7.8	0
Chloromethane	ug/m3	<25	<25	nm
F-114	ug/m3	<14	<14	nm
Vinyl chloride	ug/m3	<1.7	<1.7	nm
1,3-Butadiene	ug/m3	<0.3	<0.3	nm
Butane	ug/m3	<32	<32	nm
Bromomethane	ug/m3	<26	<26	nm
Chloroethane	ug/m3	<18	<18	nm
Vinyl bromide	ug/m3	<2.9	<2.9	nm
Ethanol	ug/m3	<50	<50	nm
Acrolein	ug/m3	40	40	0
Pentane	ug/m3	<40	<40	nm
Trichlorofluoromethane	ug/m3	28	27	4
Acetone	ug/m3	340	340	0
2-Propanol	ug/m3	<58	<58	nm
1,1-Dichloroethene	ug/m3	<2.7	<2.7	nm
trans-1,2-Dichloroethene	ug/m3	<2.7	<2.7	nm
Methylene chloride	ug/m3	<230	<230	nm
t-Butyl alcohol (TBA)	ug/m3	140	130	7
3-Chloropropene	ug/m3	<21	<21	nm
CFC-113	ug/m3	<5.1	<5.1	nm
Carbon disulfide	ug/m3	<42	<42	nm
Methyl t-butyl ether (MTBE)	ug/m3	<48	<48	nm
Vinyl acetate	ug/m3	<47	<47	nm
1,1-Dichloroethane	ug/m3	<2.7	<2.7	nm
cis-1,2-Dichloroethene	ug/m3	<2.7	<2.7	nm
Hexane	ug/m3	<24	<24	nm
Chloroform	ug/m3	11	10	10
Ethyl acetate	ug/m3	<48	<48	nm
Tetrahydrofuran	ug/m3	<4	<4	nm
2-Butanone (MEK)	ug/m3	<40	<40	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.27	<0.27	nm
1,1,1-Trichloroethane	ug/m3	<3.7	<3.7	nm
Carbon tetrachloride	ug/m3	<2.1	<2.1	nm
Benzene	ug/m3	180	180	0
Cyclohexane	ug/m3	<46	<46	nm
1,2-Dichloropropane	ug/m3	<1.5	<1.5	nm
1,4-Dioxane	ug/m3	<2.4	<2.4	nm
2,2,4-Trimethylpentane	ug/m3	<31	<31	nm

Date of Report: 07/26/22
Date Received: 07/19/22
Project: DTG-Yakima LPL 353-8472-002, F&BI 207298

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 207298-06 1/6.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Methyl methacrylate	ug/m3	<27	<27	nm
Heptane	ug/m3	<27	<27	nm
Bromodichloromethane	ug/m3	0.54	0.54	0
Trichloroethene	ug/m3	<0.72	<0.72	nm
cis-1,3-Dichloropropene	ug/m3	<6.1	<6.1	nm
4-Methyl-2-pentanone	ug/m3	54	43	23
trans-1,3-Dichloropropene	ug/m3	<3	<3	nm
Toluene	ug/m3	<130	<130	nm
1,1,2-Trichloroethane	ug/m3	<0.37	<0.37	nm
2-Hexanone	ug/m3	<27	<27	nm
Tetrachloroethene	ug/m3	<45	<45	nm
Dibromochloromethane	ug/m3	<0.57	<0.57	nm
1,2-Dibromoethane (EDB)	ug/m3	<0.51	<0.51	nm
Chlorobenzene	ug/m3	<3.1	<3.1	nm
Ethylbenzene	ug/m3	5.7	5.6	2
1,1,2,2-Tetrachloroethane	ug/m3	<0.92	<0.92	nm
Nonane	ug/m3	<35	<35	nm
Isopropylbenzene	ug/m3	<66	<66	nm
2-Chlorotoluene	ug/m3	<35	<35	nm
Propylbenzene	ug/m3	<33	<33	nm
4-Ethyltoluene	ug/m3	<33	<33	nm
m,p-Xylene	ug/m3	11	11	0
o-Xylene	ug/m3	4.5	4.5	0
Styrene	ug/m3	120	120	0
Bromoform	ug/m3	<14	<14	nm
Benzyl chloride	ug/m3	<0.35	<0.35	nm
1,3,5-Trimethylbenzene	ug/m3	<33	<33	nm
1,2,4-Trimethylbenzene	ug/m3	<33	<33	nm
1,3-Dichlorobenzene	ug/m3	11	11	0
1,4-Dichlorobenzene	ug/m3	3.7	3.7	0
1,2-Dichlorobenzene	ug/m3	<4	<4	nm
1,2,4-Trichlorobenzene	ug/m3	<5	<5	nm
Naphthalene	ug/m3	<1.8	<1.8	nm
Hexachlorobutadiene	ug/m3	<1.4	<1.4	nm

Date of Report: 07/26/22
Date Received: 07/19/22
Project: DTG-Yakima LPL 353-8472-002, F&BI 207298

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Propene	ug/m3	23	82	70-130
Dichlorodifluoromethane	ug/m3	67	107	70-130
Chloromethane	ug/m3	28	100	70-130
F-114	ug/m3	94	103	70-130
Vinyl chloride	ug/m3	35	92	70-130
1,3-Butadiene	ug/m3	30	86	70-130
Butane	ug/m3	32	80	70-130
Bromomethane	ug/m3	52	110	70-130
Chloroethane	ug/m3	36	96	70-130
Vinyl bromide	ug/m3	59	106	70-130
Ethanol	ug/m3	25	87	70-130
Acrolein	ug/m3	31	78	70-130
Pentane	ug/m3	40	71	70-130
Trichlorofluoromethane	ug/m3	76	102	70-130
Acetone	ug/m3	32	93	70-130
2-Propanol	ug/m3	33	79	70-130
1,1-Dichloroethene	ug/m3	54	100	70-130
trans-1,2-Dichloroethene	ug/m3	54	95	70-130
Methylene chloride	ug/m3	94	111	70-130
t-Butyl alcohol (TBA)	ug/m3	41	85	70-130
3-Chloropropene	ug/m3	42	75	70-130
CFC-113	ug/m3	100	110	70-130
Carbon disulfide	ug/m3	42	105	70-130
Methyl t-butyl ether (MTBE)	ug/m3	49	81	70-130
Vinyl acetate	ug/m3	48	71	70-130
1,1-Dichloroethane	ug/m3	55	95	70-130
cis-1,2-Dichloroethene	ug/m3	54	94	70-130
Hexane	ug/m3	48	81	70-130
Chloroform	ug/m3	66	101	70-130
Ethyl acetate	ug/m3	49	93	70-130
Tetrahydrofuran	ug/m3	40	80	70-130
2-Butanone (MEK)	ug/m3	40	90	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	95	70-130
1,1,1-Trichloroethane	ug/m3	74	101	70-130
Carbon tetrachloride	ug/m3	85	104	70-130
Benzene	ug/m3	43	88	70-130
Cyclohexane	ug/m3	46	80	70-130
1,2-Dichloropropane	ug/m3	62	104	70-130
1,4-Dioxane	ug/m3	49	97	70-130
2,2,4-Trimethylpentane	ug/m3	63	96	70-130

Date of Report: 07/26/22
Date Received: 07/19/22
Project: DTG-Yakima LPL 353-8472-002, F&BI 207298

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl methacrylate	ug/m3	55	91	70-130
Heptane	ug/m3	55	87	70-130
Bromodichloromethane	ug/m3	90	114	70-130
Trichloroethene	ug/m3	73	107	70-130
cis-1,3-Dichloropropene	ug/m3	61	104	70-130
4-Methyl-2-pentanone	ug/m3	55	111	70-130
trans-1,3-Dichloropropene	ug/m3	61	102	70-130
Toluene	ug/m3	51	99	70-130
1,1,2-Trichloroethane	ug/m3	74	115	70-130
2-Hexanone	ug/m3	55	95	70-130
Tetrachloroethene	ug/m3	92	117	70-130
Dibromochloromethane	ug/m3	120	125	70-130
1,2-Dibromoethane (EDB)	ug/m3	100	109	70-130
Chlorobenzene	ug/m3	62	109	70-130
Ethylbenzene	ug/m3	59	88	70-130
1,1,2,2-Tetrachloroethane	ug/m3	93	110	70-130
Nonane	ug/m3	71	83	70-130
Isopropylbenzene	ug/m3	66	106	70-130
2-Chlorotoluene	ug/m3	70	102	70-130
Propylbenzene	ug/m3	66	97	70-130
4-Ethyltoluene	ug/m3	66	91	70-130
m,p-Xylene	ug/m3	120	95	70-130
o-Xylene	ug/m3	59	99	70-130
Styrene	ug/m3	58	93	70-130
Bromoform	ug/m3	140	117	70-130
Benzyl chloride	ug/m3	70	108	70-130
1,3,5-Trimethylbenzene	ug/m3	66	97	70-130
1,2,4-Trimethylbenzene	ug/m3	66	89	70-130
1,3-Dichlorobenzene	ug/m3	81	119	70-130
1,4-Dichlorobenzene	ug/m3	81	115	70-130
1,2-Dichlorobenzene	ug/m3	81	119	70-130
1,2,4-Trichlorobenzene	ug/m3	100	125	70-130
Naphthalene	ug/m3	71	117	70-130
Hexachlorobutadiene	ug/m3	140	115	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

207298 ~~207298~~ 207298

SAMPLE CHAIN OF CUSTODY

ME 07-19-22

Page # 1 of 1

Report To MIKE BRADY, IAN SUTTON

Company PARAMETRIX

Address 719 2ND AVE STE 200

City, State, ZIP SEATTLE, WA

Phone 206 519 5781 Email mbrady@parametrix.com

SAMPLERS (signature) MLB

PROJECT NAME & ADDRESS: DTG - YAKIMA LPL

PO # 553-8472-002

NOTES:

INVOICE TO

TURNAROUND TIME
~~Standard~~
X RUSH 5 Day TAT per MB
Rush charges authorized by: 7/20/22 ME

SAMPLE DISPOSAL
X Default: Clean after 3 days
Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	EPA 3C (TedlarBag)	Notes
AMB-5	01	3124	07845	(IA) / SG	7/18/22	-27	927	-13	1505	X			X			
VP-4	02A-B	1179	60	IA / (SG)	7/18/22	-28.5	1259	-4	1304	X			X		X	
VP-5	03	8207	305	IA / (SG)	7/18/22	-27	1331	-4.5	1336	X			X		X	
VP-6	04	2438	301	IA / (SG)	7/18/22	-28	1358	-4.5	1403	X			X		X	
VP-7	05	3252	62	IA / (SG)	7/18/22	-28	1423	-4.5	1428	X			X		X	
VP-8	06	3258	68	IA / (SG)	7/18/22	-28	1449	-5	1500	X			X		X	
				IA / SG												
				IA / SG										Samples received at 26 °C		

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: MLB	MIKE BRADY	PARAMETRIX	7/19	1045
Received by:	Liz Wesber-Bruya	F?B	7/19	1045
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COCTO-15.DOC

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

RE: 207298
Work Order Number: 2207259

July 26, 2022

Attention Michael Erdahl:

Fremont Analytical, Inc. received 5 sample(s) on 7/19/2022 for the analyses presented in the following report.

Major Gases by EPA Method 3C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *07/26/2022*

CLIENT: Friedman & Bruya
Project: 207298
Work Order: 2207259

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2207259-001	VP-4	07/18/2022 1:04 PM	07/19/2022 12:41 PM
2207259-002	VP-5	07/18/2022 1:36 PM	07/19/2022 12:41 PM
2207259-003	VP-6	07/18/2022 2:03 PM	07/19/2022 12:41 PM
2207259-004	VP-7	07/18/2022 2:28 PM	07/19/2022 12:41 PM
2207259-005	VP-8	07/18/2022 3:00 PM	07/19/2022 12:41 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2207259**
Date: **7/26/2022**

CLIENT: Friedman & Bruya
Project: 207298

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2207259**
Date Reported: **7/26/2022**

CLIENT: Friedman & Bruya
Project: 207298

Lab ID: 2207259-001 **Collection Date:** 7/18/2022 1:04:00 PM
Client Sample ID: **VP-4** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R77097		Analyst: TC
Carbon Dioxide	3.90	0.0500		%	1	7/19/2022 3:01:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/19/2022 3:01:00 PM
Methane	ND	0.0500		%	1	7/19/2022 3:01:00 PM
Nitrogen	76.2	0.0500		%	1	7/19/2022 3:01:00 PM
Oxygen	19.9	0.0500		%	1	7/19/2022 3:01:00 PM
Hydrogen	ND	0.0500		%	1	7/19/2022 3:01:00 PM
BTU	ND			BTU/ft^3	1	7/19/2022 3:01:00 PM

Lab ID: 2207259-002 **Collection Date:** 7/18/2022 1:36:00 PM
Client Sample ID: **VP-5** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R77097		Analyst: TC
Carbon Dioxide	17.3	0.0500		%	1	7/19/2022 3:13:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/19/2022 3:13:00 PM
Methane	ND	0.0500		%	1	7/19/2022 3:13:00 PM
Nitrogen	72.2	0.0500		%	1	7/19/2022 3:13:00 PM
Oxygen	10.5	0.0500		%	1	7/19/2022 3:13:00 PM
Hydrogen	ND	0.0500		%	1	7/19/2022 3:13:00 PM
BTU	ND			BTU/ft^3	1	7/19/2022 3:13:00 PM

CLIENT: Friedman & Bruya
Project: 207298

Lab ID: 2207259-003 **Collection Date:** 7/18/2022 2:03:00 PM
Client Sample ID: **VP-6** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R77097		Analyst: TC
Carbon Dioxide	9.35	0.0500		%	1	7/19/2022 3:25:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/19/2022 3:25:00 PM
Methane	ND	0.0500		%	1	7/19/2022 3:25:00 PM
Nitrogen	75.2	0.0500		%	1	7/19/2022 3:25:00 PM
Oxygen	15.4	0.0500		%	1	7/19/2022 3:25:00 PM
Hydrogen	ND	0.0500		%	1	7/19/2022 3:25:00 PM
BTU	ND			BTU/ft^3	1	7/19/2022 3:25:00 PM

Lab ID: 2207259-004 **Collection Date:** 7/18/2022 2:28:00 PM
Client Sample ID: **VP-7** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R77097		Analyst: TC
Carbon Dioxide	13.0	0.0500		%	1	7/19/2022 3:38:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/19/2022 3:38:00 PM
Methane	ND	0.0500		%	1	7/19/2022 3:38:00 PM
Nitrogen	75.4	0.0500		%	1	7/19/2022 3:38:00 PM
Oxygen	11.5	0.0500		%	1	7/19/2022 3:38:00 PM
Hydrogen	ND	0.0500		%	1	7/19/2022 3:38:00 PM
BTU	ND			BTU/ft^3	1	7/19/2022 3:38:00 PM

Analytical Report

Work Order: **2207259**
Date Reported: **7/26/2022**

CLIENT: Friedman & Bruya
Project: 207298

Lab ID: 2207259-005
Client Sample ID: **VP-8**
Collection Date: 7/18/2022 3:00:00 PM
Matrix: Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Major Gases by EPA Method 3C				Batch ID: R77097		Analyst: TC
Carbon Dioxide	0.793	0.0500		%	1	7/19/2022 3:50:00 PM
Carbon Monoxide	ND	0.0500		%	1	7/19/2022 3:50:00 PM
Methane	ND	0.0500		%	1	7/19/2022 3:50:00 PM
Nitrogen	76.0	0.0500		%	1	7/19/2022 3:50:00 PM
Oxygen	23.2	0.0500		%	1	7/19/2022 3:50:00 PM
Hydrogen	ND	0.0500		%	1	7/19/2022 3:50:00 PM
BTU	ND			BTU/ft^3	1	7/19/2022 3:50:00 PM

Work Order: 2207259
CLIENT: Friedman & Bruya
Project: 207298

QC SUMMARY REPORT

Major Gases by EPA Method 3C

Sample ID: **LCSA** SampType: **LCS** Units: **%** Prep Date: **7/19/2022** RunNo: **77097**
Client ID: **LCSW** Batch ID: **R77097** Analysis Date: **7/19/2022** SeqNo: **1583426**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	99.6	0.0500	100.0	0	99.6	70	130				
Carbon Monoxide	99.6	0.0500	100.0	0	99.6	70	130				
Methane	99.6	0.0500	100.0	0	99.6	70	130				
Nitrogen	99.7	0.0500	100.0	0	99.7	70	130				
Oxygen	99.2	0.0500	100.0	0	99.2	70	130				
Hydrogen	96.7	0.0500	100.0	0	96.7	70	130				

Sample ID: **2207259-001AREP** SampType: **REP** Units: **%** Prep Date: **7/19/2022** RunNo: **77097**
Client ID: **VP-4** Batch ID: **R77097** Analysis Date: **7/19/2022** SeqNo: **1583421**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon Dioxide	3.92	0.0500						3.900	0.425	30	
Carbon Monoxide	ND	0.0500						0		30	
Methane	ND	0.0500						0		30	
Nitrogen	76.1	0.0500						76.21	0.0995	30	
Oxygen	20.0	0.0500						19.89	0.297	30	
Hydrogen	ND	0.0500						0		30	
BTU	ND							0	0		

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2207259
Logged by:	Clare Griggs	Date Received:	7/19/2022 12:41:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present ☐
2.	How was the sample delivered?	Client				

Log In

3.	Coolers are present?	Yes	☐	No	☑	NA ☐
		Air Samples				
4.	Shipping container/cooler in good condition?	Yes	☑	No	☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No	☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes	☐	No	☐	NA ☑
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☐	No	☐	NA ☑
8.	Sample(s) in proper container(s)?	Yes	☑	No	☐	
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐	
10.	Are samples properly preserved?	Yes	☑	No	☐	
11.	Was preservative added to bottles?	Yes	☐	No	☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes	☐	No	☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No	☐	
14.	Does paperwork match bottle labels?	Yes	☑	No	☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐	
16.	Is it clear what analyses were requested?	Yes	☑	No	☐	
17.	Were all holding times able to be met?	Yes	☑	No	☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2207259

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 207298

PO # C-250

REMARKS

TURNAROUND TIME
- ☒ Standard TAT
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH	Major Gases 3C							Notes
VP-4		7/18/22	1304 ~~1505~~	air	1				X							
VP-5			1336 1309		1				X							
VP-6			1403 1336		1				X							
VP-7			1428 1403		1				X							
VP-8			1500		1				X							

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	7/19/22	1108
Received by:	Yeyi Chen	Yeyi	Fremont Analytical	7/19/22	12:41
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044