MEMORANDUM

DATE: April 3, 2020

TO: Mr. Dick Peterson – PFG Partnership and Universal Sheet Metal
Mr. Greg Jenkins – UMC Global

FROM: Mike Ehlebracht, Marissa Goodman, and Andrew Nakahara, Hart Crowser

RE: **Vapor Intrusion Investigation Sampling and Analysis**
Universal Sheet Metal and Universal Manufacturing Property
14400 and 14410 NE North Woodinville Way
Woodinville, Washington
VCP Project No.: NW3077
19365-01

This memorandum provides sample collection procedures and analytical results for indoor air and soil vapor sampling at the Universal Sheet Metal and Universal Manufacturing property (Property). The Property is comprised of the Universal Sheet Metal (USM) and Universal Manufacturing Company (UMC) facilities located at 14400 and 14410 NE North Woodinville Way, in Woodinville, Washington (Figure 1), respectively. The Model Toxics Control Act (MTCA) site (Site), defined as where hazardous substances have come to be located, is comprised of a portion of the UMC facility (Facility Site ID 2191 and Cleanup Site ID 1239) and the USM facility (Facility Site ID 25233984 and Cleanup Site ID 13124).

The objective of the vapor intrusion investigation was to obtain indoor air and soil vapor data to quantify short-term and chronic trichloroethene (TCE) exposure and evaluate whether prompt mitigating actions are required pursuant to the Washington State Department of Ecology's (Ecology's) Vapor Intrusion Investigations and Short-term TCE Toxicity (Implementation Memorandum No. 22) guidance. A total of seven indoor air samples, two ambient upwind air samples, and seven soil vapor samples were collected on February 21, 2020 and March 11, 2020.

Background and Scope of Work

Property Location and Operational History

The Property consists of a rectangular-shaped parcel (King County tax parcel 032605-9115) covering approximately 3.25 acres. The Property is situated in the SE 1/4 of Section 3 of Township 26 North and Range 5 East and is northeast of the intersection of NE North Woodinville Way and 144th Avenue NE. The Property is zoned as industrial while surrounding properties to the north, west, and east are

predominantly commercial and light industrial. The area south of the Property, across NE North Woodinville Way, includes multi-family residential units.

Two main buildings occupy the Property with various outbuildings present. USM currently uses the southern building on the Property (USM building) for storage. This building was constructed in the late 1960s by UMC, which began manufacturing operations including metals fabrication, printed circuit board manufacturing, and electroplating in 1968. The primary solvent used to clean circuit boards and parts for metal fabrication was TCE, which was stored in the area referred to as the "Former Solvent Storage/Handling Area," as shown on Figures 2 and 3. TCE use was discontinued in the mid- to late 1980s. Industrial operations in the USM building were recently discontinued in June 2019. Future use of the USM building is anticipated to be similar industrial or commercial operations.

In 1976, the northern building was constructed. UMC transferred some of its operations to the northern building (UMC building) and USM commenced operations in the USM building. In 2010, UMC ceased circuit board manufacturing operations and its production line was closed. UMC currently maintains sales and engineering operations in the small building west of the UMC building. USM continued to use the UMC building for product assembly and as a warehouse until operations were recently discontinued in June 2019. Future use of the UMC building is anticipated to be similar industrial or commercial operations.

Previous Soil Vapor Investigations

Previous environmental investigations at the Property have confirmed concentrations of contaminants—primarily TCE and its degradation products—in soil, groundwater, and/or soil gas below one or both buildings above modified MTCA Method B screening levels for vapor intrusion (for commercial buildings).

In 2009 and 2010, CDM Smith (CDM) and Beacon Environmental Services, Inc. conducted a passive soil gas investigation at the Property. Two areas of elevated volatile organic compound (VOC) concentrations were identified in this report, shown on Figures 2 and 3 as "Soil Gas Anomaly Areas." TCE concentrations collected from samples in the southwest quadrant of the UMC building were identified at an estimated concentration of 16,300 nanograms per sampler. The second area of elevated VOC concentrations, in the northeast quadrant of the USM building, identified TCE at an estimated concentration of 48,500 nanograms per sampler. More details are described in an appendix in CDM's 2016 Draft Remedial Investigation Report dated June 22, 2016 (CDM 2016).

In May 2019, sub-slab vapor effluent samples were collected from each of the four temporary vapor extraction systems installed as part of a subsurface permeability assessment. Samples were collected while the temporary extraction systems were operating using 1-liter Summa canisters over

approximately five minutes. Sample locations are shown on Figures 2 and 3. SSV-2, collected in the UMC building and adjacent to a soil gas anomaly area, and SSV-3, collected in the USM building, contained the highest concentrations of chlorinated VOCs of the four samples. In SSV-2, tetrachloroethylene (PCE) was detected at 1,240 micrograms per cubic meter (µg/m^3) and TCE at 990 µg/m^3. In SSV-3, TCE was detected at 1,300 µg/m^3. More details on the May 2019 sampling can be found in Hart Crowser's Sub-Slab Depressurization System Assessment and Design letter, dated June 19, 2019 (Hart Crowser 2019).

Scope of Work

Our scope of work included:

- Collecting seven indoor air, seven soil vapor, and two ambient upwind air samples on February 21 and March 11, 2020; and
- Submitting the air and vapor samples for chemical analyses of VOCs and/or helium.

This indoor air and soil vapor sampling was conducted consistent with the requirements of MTCA (Chapter 173-340), Ecology's Implementation Memorandum No. 22, and Hart Crowser's Vapor Intrusion Investigation Sampling and Analysis Plan dated February 13, 2020.

Indoor Air and Soil Vapor Sampling

Field Investigation Activities and Observations

Pursuant to the Vapor Intrusion Investigation Sampling and Analysis Plan, most of the remaining potential indoor air sources that had not been previously removed from the USM and UMC buildings during the November 8, 2019, site visit were removed approximately seven days prior to ventilating; the USM building was ventilated on February 19, 2020 and the UMC building was ventilated on March 9, 2020. Several additional potential indoor air sources were discovered and removed the days of ventilation. The sump in each building was covered on the days of ventilation and throughout the sampling events as well. During the approximately 8-hour ventilation periods, exterior doors and windows were opened and fans were used in rooms without access to exterior doors and windows to allow air to ventilate through the buildings. Sample collection began between 24 to 48 hours after each ventilation period ended. During this time following the ventilation period, as well as during sampling, the heating, ventilation, and air condition (HVAC) system in the UMC building operated normally as if tenants were in the buildings so the indoor air sampling would be representative of typical occupied building conditions; there is no centralized HVAC system in the USM building.

Ambient and indoor air and soil vapor samples in and near the USM building (UA-2, IA-4 through IA-7, and SV-4 through SV-7, respectively) were collected over 8 hours between approximately 12:00 pm and

8:00 pm on February 21, 2020, and ambient and indoor air and soil vapor samples in and near the UMC building (UA-1, IA-1 through IA-3, and SV-2 through SV-3, respectively) were collected between approximately 12:00 pm and 8:00 pm on March 11, 2020. Sample locations in and near the UMC and USM buildings are shown on Figures 2 and 3, respectively. Select timed and dated photographs of the sample locations are shown in Attachment A. During and between the two sampling periods, the door connecting the USM and UMC buildings was sealed shut.

Weather conditions were monitored during the sampling periods, as changing weather conditions can affect vapor intrusion potential. The weather during the sampling periods was generally mild, with temperatures (in degrees Fahrenheit) in the high 40s to 50s, and cloudy. Weather conditions at the Kirkland weather station, approximately 7 miles from the Property, were recorded prior to, during, and after the sampling events. Barometric pressures recorded at the Kirkland weather station indicate that sampling in the USM building on February 21 was conducted over a period of falling barometric pressure, when vapor intrusion would be the greatest because indoor and outdoor pressures are less than subsurface pressure. Although sampling in the UM building on March 11 was conducted over a period of rising barometric pressure, in general, ambient temperatures indicate that both sampling events were conducted when vapor intrusion would be the greatest (i.e., when indoor air temperature is significantly higher than outdoor temperatures and ventilating the interior space with outdoor air is minimized, internal air pressure is reduced and air flow from the subsurface into the building is enhanced). A differential pressure meter was used during both sampling events to determine pressure differences between the subsurface and building interiors. Readings generally ranged between 0.000 and 0.008 inches of water, indicating that building interior pressure was either slightly greater than or equal to subsurface pressure.

Samples were collected using evacuated stainless-steel 6-liter Summa canisters equipped with 8-hour flow controllers set to a rate of no more than 200 milliliters per minute. Prior to collecting samples, the initial canister vacuums were confirmed to be at least 25 inches of mercury (in Hg) and a shut-in leak test was performed; all canisters used in the sampling events passed the shut-in leak test. Summa canisters for indoor and ambient air samples were placed approximately 3 feet above ground surface to target the breathing zone of potential receptors. One soil vapor sample (SV-1) was collected outside the UMC building at approximately 5 feet below ground surface. The remaining six soil vapor samples (SV-2 through SV-7) were collected immediately below the concrete slab of the USM or UMC buildings.

Soil vapor sample SV-1 was collected using a soil vapor probe kit manufactured by AMS. This kit uses a 5/8-inch-diameter steel outer casing rod with expendable probe tip connected to Teflon® sample tubing. The sample rod was advanced to 5 feet below ground surface using a slide hammer. The probe tip with sample tubing was then disengaged from the outer casing by retracting the outer casing approximately 3 inches. The gas vapor probe tip remained at the selected depth. The ground surface was sealed around

the probe with hydrated bentonite clay. The sampling point was covered with an enclosure and filled with helium gas as a helium detector was used to draw representative soil vapor into the sample point and confirm that the sampling assembly was airtight. We began sampling only when the helium concentration from the subsurface was less than 5 percent of the helium concentration in the shroud, indicating minimal leakage of ambient air into the sample would occur. Additionally, helium was not detected at or above laboratory reporting limits in sample SV-1. Sample tubing connected to the probe tip was purged using a peristaltic pump prior to initiating sampling.

Soil vapor samples SV-2 through SV-7 were collected by using an electric rotary hammer drill to drill an approximately 5/8-inch hole through the slab. A temporary sub-slab vapor sample port (Vapor Pins®) was advanced into the hole and sealed with Vapor Pin's brass sample barb and silicone tubing seal. The sampling assembly was shrouded with helium gas as a helium detector was used to draw representative sub-slab vapor into the sample point and confirm that the sampling assembly was airtight. We began sampling only when the helium concentration from the subsurface was less than 5 percent of the helium concentration in the shroud, indicating minimal leakage of ambient air into the sample would occur. Additionally, helium was not detected at or above laboratory reporting limits in samples SV-2 through SV-7. The tubing was purged using a peristaltic pump to remove ambient air prior to initiating sampling.

While sampling was in progress, canister vacuum readings were monitored four times—just after sample collection began, 1 hour after sample collection, 7 hours after sample collection, and just before sample collection ended—to verify that collection was progressing at the correct rate. Field staff did not detect any odors or obvious environmental concerns during sampling.

Chemical Analysis and Results

On February 21 and March 11, 2020, a total of sixteen air samples were submitted to Fremont Analytical, Inc. (Fremont) and analyzed for VOCs and/or helium. The indoor and ambient air sample analytical results are summarized in Table 1 and the soil vapor sample analytical results are summarized in Table 2. The laboratory reports are in Attachment B.

Indoor and Ambient Air

We corrected indoor air sample concentrations by subtracting the ambient upwind air sample concentrations (UA-1 subtracted from IA-1 through IA-3 and UA-2 subtracted from IA-4 through IA-7). Per Ecology's Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State, when the building-specific ambient upwind air concentration is the same or higher than the measured indoor air concentration, it can be assumed that vapor intrusion is unlikely to be impacting indoor air quality. When the indoor air concentration exceeds the ambient upwind air concentration, the potential vapor intrusion contribution (which is compared to applicable cleanup levels) can be calculated by taking the

difference between the indoor measurement and the ambient upwind measurement. Differential pressure meter readings generally ranged between 0.000 and 0.008 inches of water, indicating that building interior pressure was either slightly greater than or equal to subsurface pressure. Vapor intrusion is unlikely to occur when building interior pressure is greater than subsurface pressure.

We compared the corrected indoor air results with short-term action levels for TCE and modified MTCA Method B and MTCA Method C indoor air cleanup levels. Laboratory analysis and results were:

- TCE was detected in six indoor air samples (IA-2 through IA-7), up to a concentration of 1.984 µg/m^3, below the short-term action level of 7.5 µg/m^3 and modified MTCA Method B and Method C indoor air cleanup level of 2 µg/m^3.

- 1,2-Dichloroethane was detected in one air sample (IA-1) at a concentration (0.823 µg/m^3) above the modified MTCA Method B cleanup level of 0.32 µg/m^3. 1,4-Dichlorobenzene was detected above both the modified MTCA Method B and Method C cleanup levels of 0.76 and 2.3 µg/m^3, respectively, in six air samples (IA-2 through IA-7) and above just the modified Method B cleanup level in one sample (IA-1). Acrolein was detected above both the modified MTCA Method B and Method C cleanup levels of 0.07 and 0.02 µg/m^3, respectively, in all seven indoor air samples. Naphthalene was detected above both the modified MTCA Method B and Method C cleanup levels of 0.25 and 0.74 µg/m^3, respectively, in three samples (IA-2, IA-3, and IA-5) and in one sample (IA-1) at a concentration exceeding only the modified Method B cleanup level. None of these analytes were identified as contaminants of concern (COCs) in CDM's Draft Remedial Investigation Report.

- All other analytes were either not detected at or above laboratory reporting limits or were detected at concentrations below both the modified MTCA Method B and Method C cleanup levels.

We calculated site-specific attenuation factors from the indoor air and soil vapor samples in the subsurface soil gas source areas in the UMC building (IA-2 and SV-2) and USM building (IA-7 and SV-7). Because TCE was detected in both soil gas and indoor air, we used measured TCE concentrations in these two source areas to calculate attenuation factors. For the UMC and USM buildings, the calculated attenuation factors were 0.0002 and 0.0015, respectively. Both of these site-specific attenuation factors are well below Ecology's default attenuation factor of 0.03. Applying the site-specific attenuation factors of 0.0002 to the soil vapor samples in the UMC building and 0.0015 to the soil vapor samples in the USM building shows that the predicted vapor intrusion contribution is significantly less than the measured indoor air concentrations.

Soil Vapor

We compared the soil vapor results with short-term non-residential screening levels for TCE and modified MTCA Method B and MTCA Method C sub-slab soil gas screening levels. Laboratory analysis and results were:

- TCE was detected in all seven soil vapor samples, three of which (SV-2, SV-3, and SV-7) at concentrations above the short-term non-residential screening level of 250 µg/m^3. Two soil vapor samples (SV-1 and SV-6) were detected below the short-term non-residential screening level but above the modified MTCA Method B and Method C screening level of 67 µg/m^3.

- 1,2-Dichloroethane was not detected at or above laboratory reporting limits in any of the soil vapor samples. 1,4-Dichlorobenzene was detected in four soil vapor samples (SV-4 through SV-7), one of which (SV-4) at a concentration slightly exceeding the modified MTCA Method B screening level of 25 µg/m^3. Acrolein was detected in five soil vapor samples, one of which (SV-1) at a concentration exceeding both the modified MTCA Method B and Method C screening levels and four of which (SV-4 through SV-7) at concentrations exceeding only the Method C screening level. Chloroform was detected in three soil vapor samples, two of which (SV-2 and SV-3) at concentrations exceeding both the modified MTCA Method B and Method C screening levels. Naphthalene was detected in four soil vapor samples (SV-4 through SV-7), all of which at concentrations below both the modified MTCA Method B and Method C screening levels. Vinyl chloride was detected in four soil vapor samples, one of which (SV-2) at a concentration exceeding only the modified Method B screening level.

- All other analytes were either not detected at or above laboratory reporting limits or were detected below their respective modified MTCA Method B and Method C screening levels.

Conclusions

Although three soil vapor samples had TCE concentrations above the short-term non-residential screening level, TCE concentrations in indoor air samples were all detected below the short-term action level. This indicates no prompt mitigative action is required for short-term TCE exposure pursuant to Ecology's Implementation Memorandum No. 22. Additionally, TCE concentrations in indoor air samples were below the modified MTCA Method B and Method C cleanup levels. The indoor air sample with the highest concentration of TCE (IA-5) was co-located with the soil vapor sample with the lowest concentration of TCE (SV-5), suggesting the TCE detections in indoor air samples may be influenced by indoor air sources.

The differential pressure meter readings, which indicated that building interior pressure was either slightly greater than or equal to subsurface pressure, show that vapor intrusion was not likely occurring

during sampling. This is an additional line of evidence suggesting vapor intrusion may not be the primary source of indoor air concentrations and the detected analytes are likely influenced by indoor air sources. Applying the site-specific attenuation factors to the soil vapor samples also shows that the predicted vapor intrusion contribution is significantly less than the measured indoor air concentrations.

Four analytes (1,2-dichloroethane, 1,4-dichlorobenzene, acrolein, and naphthalene) were detected in one or more indoor air samples at concentrations exceeding modified MTCA Method B and/or MTCA Method C cleanup levels. 1,2-Dichloroethane was detected in only one indoor air sample and was not detected at or above laboratory reporting limits in any of the soil vapor samples, suggesting this exceedance may be an anomaly or influenced by indoor air sources. 1,4-Dichlorobenzene exceeded MTCA cleanup levels in all seven indoor air samples but was only detected in soil vapor samples from the USM building (only one of which at a concentration slightly exceeding the modified MTCA Method B screening level). Additionally, the soil vapor and indoor air concentrations of 1,4-dichlorobenzene were around the same magnitude, suggesting that vapor intrusion may not be the primary source for indoor air concentrations. Acrolein exceeded MTCA cleanup levels in all seven indoor air samples and exceeded MTCA screening levels in five soil vapor samples, though the indoor air and soil vapor concentrations were around the same magnitude suggesting that vapor intrusion may not be the primary source of indoor air concentrations. Naphthalene exceeded MTCA cleanup levels in four indoor air samples, primarily from the UMC building; however, all four of the naphthalene detections in soil vapor samples were from the USM building. Additionally, the indoor air and soil vapor concentrations were around the same magnitude suggesting that vapor intrusion may not be the primary source of indoor air concentrations.

If future air, soil, and/or groundwater sampling indicates the analytes detected in indoor air at concentrations exceeding modified MTCA Method B and/or MTCA Method C cleanup levels (i.e., 1,2-dichloroethane, 1,4-dichlorobenzene, acrolein, and naphthalene) are COCs, we will evaluate mitigative options for those chronic indoor air exceedances in the future feasibility study.

Limitations

Work for this project was performed in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Universal Sheet Metal, Universal Manufacturing, and PFG Partnership for specific application to the referenced property. This memorandum is not meant to represent a legal opinion. No other warranty, express or implied, is made.

References

CDM 2016. Draft Remedial Investigation Report, Universal Sheet Metal Inc., Universal Manufacturing Corp., Woodinville, Washington. Prepared by CDM Smith for Universal Sheet Metal Inc. and Universal Manufacturing Corp., June 22, 2016.

Ecology 2018a. Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action. Publication no. 09-09-047. Prepared by Washington State Department of Ecology, Review Draft Revised April 2018.

Ecology 2018b. Frequently Asked Questions (FAQs) Regarding Vapor Intrusion (VI) and Ecology's 2009 Draft VI Guidance, Implementation Memorandum No. 21. Prepared by Washington State Department of Ecology, November 15, 2018.

Ecology 2019. Vapor Intrusion (VI) Investigations and Short-term Trichloroethene (TCE) Toxicity, Implementation Memorandum No. 22. Prepared by Washington State Department of Ecology, October 1, 2019.

Hart Crowser 2019. Sub-Slab Depressurization System Assessment and Design, Universal Sheet Metal and Universal Manufacturing Site, 14400 and 14410 NE North Woodinville Way, Woodinville, Washington. Prepared by Hart Crowser for PFG Partnership, Universal Sheet Metal, and UMC Global, June 19, 2019

Hart Crowser 2020. Vapor Intrusion Investigation Sampling and Analysis Plan, Universal Sheet Metal and Universal Manufacturing Property, 14400 and 14410 NE North Woodinville Way, Woodinville, Washington. Prepared by Hart Crowser for Universal Sheet Metal, Universal Manufacturing, and PFG Partnership, February 13, 2020.

Attachments:
Table 1 – Analytical Results for Indoor and Ambient Air Samples
Table 2– Analytical Results for Soil Vapor Samples
Figure 1 – Vicinity Map
Figure 2 – Sampling Plan Universal Manufacturing Building
Figure 3 – Sampling Plan Universal Sheet Metal Building
Attachment A – Field Investigation Photographs
Attachment B – Chemical Data Quality Review and Laboratory Reports

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Table 1 - Analytical Results for Indoor and Ambient Air Samples

Sample ID Sampling Date	Modified MTCA Method B Cleanup Level[a]	MTCA Method C Cleanup Level	IA-1 3/11/2020	IA-2 3/11/2020	IA-3 3/11/2020	IA-4 2/21/2020	IA-5 2/21/2020	IA-6 2/21/2020	IA-7 2/21/2020	IA-1 (corrected)[b] 3/11/2020	IA-2 (corrected)[b] 3/11/2020	IA-3 (corrected)[b] 3/11/2020	IA-4 (corrected)[c] 2/21/2020	IA-5 (corrected)[c] 2/21/2020
VOCs by EPA-TO-15 in µg/m^3														
1,1,1-Trichloroethane	17,000	5,000	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U	0.546 U
1,1,2,2-Tetrachloroethane	0.14	0.43	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*
CFC 113	17,000	5,000	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U	0.766 U
1,1,2-Trichloroethane	0.52	0.2	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*
1,1-Dichloroethane	5.2	16	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U
1,1-Dichloroethene	670	200	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U	0.397 U
1,2,4-Trichlorobenzene	6.7	2	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U	0.557 U
1,2,4-Trimethylbenzene	200	60	0.369 U	**1.17**	**0.847**	**0.933**	**0.884**	**0.937**	0.369 U	0.369 U	**1.17**	**0.847**	**0.397**	**0.348**
1,2-Dibromoethane (EDB)	0.01	0.042	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*
1,2-Dichlorobenzene	670	200	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U	0.601 U
1,2-Dichloroethane	0.32	0.96	**0.823**	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	0.202 U	**0.823**	0.202 U	0.202 U	0.202 U	0.202 U
1,2-Dichloropropane	2.2	4	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U	0.578 U
1,3,5-Trimethylbenzene			0.369 U	0.369 U	0.369 U	0.369 U	0.369 U	0.369 U	0.369 U	0.369 U	0.369 U	0.369 U	0.369 U	0.369 U
1,3-Butadiene	0.28	0.83	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U	0.277 U
1,3-Dichlorobenzene			0.451 U	0.451 U	0.451 U	0.451 U	**33.1** J	**40.9** J	0.451 U	0.451 U	0.451 U	0.451 U	0.451 U	**33.1** J
1,4-Dichlorobenzene	0.76	2.3	**1.78**	**20.5**	**8.68**	**47.4** J	**35.2** J	**43.3** J	**7.06**	**1.78**	**20.5**	**8.68**	**47.4** J	**35.2** J
1,4-Dioxane			0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	N/A	0.36 U
2-Butanone (Methyl Ethyl Ketone)	17,000	5,000	**2.95**	**2.23**	**1.86**	**2.99**	**3.82**	**3.22**	**4.84**	**2.211**	**1.491**	**1.121**	**1.16**	**1.99**
2-Hexanone			1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U
Isopropyl alcohol			**38.5** J	**4.46**	**1.53**	**1.73**	0.614 U	**1.88**	**3.51**	**37.809** J	**3.769**	**0.839**	**1.73**	0.614 U
4-Methyl-2-pentanone	10,000	3,000	**3.63**	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	1.02 U	**3.63**	1.02 U	1.02 U	1.02 U	1.02 U
Acetone			**11.4** J	**8.54** J	**6.61** J	**14.4** J	**20.7** J	**23.8**	**19.1** J	**7.45** J	**4.59** J	**2.66** J	**4.2** J	**10.5** J
Acrolein	0.07	0.02	**1.86**	**0.639**	**0.585**	**0.84**	**0.727**	**0.716**	**0.963**	**1.39**	**0.169**	**0.115**	**0.232**	**0.119**
Benzene	1.1	3.2	**0.739**	**1.04**	**0.958**	**1.1**	**1.19**	**0.971**	**1.39**	**0.236**	**0.537**	**0.455**	N/A	N/A
Benzyl chloride	0.17	0.51	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*
Dichlorobromomethane	0.224	0.676	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*
Bromoform	7.6	23	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U	0.517 U
Bromomethane	17	5	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U	0.485 U
Carbon Disulfide	2,300	700	1.17 U	1.17 U	1.17 U	1.17 U	**1.42**	1.17 U	1.17 U	1.17 U	1.17 U	1.17 U	1.17 U	**1.42**
Carbon Tetrachloride	1.4	4.2	**0.599**	**0.578**	**0.588**	**0.504**	**0.542**	**0.455**	**0.687**	**0.015**	N/A	**0.004**	N/A	N/A
Chlorobenzene	170	50	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
Dibromochloromethane			1.06 U	1.06 U	1.06 U	1.06 U	1.06 U	1.06 U	1.06 U	1.06 U	1.06 U	1.06 U	1.06 U	1.06 U
Chloroethane	33,000	10,000	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U	0.264 U
Chloroform	0.36	1.1	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U	0.244 U
Chloromethane	300	90	**1.48**	**1.46**	**1.44**	**1.16**	**1.4**	**1.69**	**1.6**	N/A	N/A	N/A	N/A	**0.06**
cis-1,2-Dichloroethene			0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U
cis-1,3-Dichloropropene			0.454 U	0.454 U	0.454 U	0.454 U	0.454 U	0.454 U	0.454 U	0.454 U	0.454 U	0.454 U	0.454 U	0.454 U
Cyclohexane			**0.766**	**0.444**	**0.442**	**0.538**	**0.542**	**0.456**	**0.43**	**0.766**	**0.444**	**0.442**	**0.051**	**0.055**
CFC 12	330	100	**2.52**	**2.69**	**2.6**	**2.31**	**2.76**	**3.18**	**3.21**	N/A	N/A	N/A	N/A	N/A
CFC 114			0.699 U	0.699 U	0.699 U	0.699 U	0.699 U	0.699 U	0.699 U	0.699 U	0.699 U	0.699 U	0.699 U	0.699 U
Ethyl acetate			**2.51**	0.901 U	0.901 U	0.901 U	**4.28**	0.901 U	0.901 U	**2.51**	0.901 U	0.901 U	0.901 U	**4.28**
Ethyl Benzene	3,300	1,000	**0.459**	**0.619**	**0.575**	**0.742**	**0.673**	**0.805**	**0.687**	**0.459**	**0.619**	**0.575**	**0.027**	N/A
Heptane			**8.32**	**0.757**	**0.702**	**1.32**	**1.2**	**1.44**	**1.44**	**8.32**	**0.757**	**0.702**	**0.3**	**0.18**
Hexachlorobutadiene	0.38	1.1	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*
m,p-Xylene			**1.18**	**2.09**	**1.89**	**2.69**	**2.53**	**2.84**	**2.11**	**1.18**	**2.09**	**1.89**	**0.31**	**0.15**
Methyl methacrylate	2,300	700	0.409 U	0.409 U	0.409 U	**1.02**	**1.03**	0.409 U	0.409 U	0.409 U	0.409 U	0.409 U	**0.204**	**0.214**
Methylene Chloride	830	600	**2.28**	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	1.74 U	**2.28**	1.74 U	1.74 U	1.74 U	1.74 U
Naphthalene	0.25	0.74	**0.575** J	**1.43** J	**1.01** J	**1.52**	**2.79**	**1.51**	**1.18**	**0.337** J	**1.192** J	**0.772** J	**0.18**	**1.45**
n-Hexane	2,300	700	**0.886**	**1.01**	**1.17**	**1.42**	**2.19**	**1.07**	**1.59**	**0.886**	**1.01**	**1.17**	**0.572**	**1.342**
o-Xylene			**0.484**	**0.834**	**0.719**	**1.1**	**1**	**1.2**	**0.816**	**0.484**	**0.834**	**0.719**	**0.277**	**0.177**
4-Ethyltoluene			0.492 U	0.492 U	0.492 U	0.492 U	0.492 U	**0.531**	0.492 U	0.492 U	0.492 U	0.492 U	0.492 U	0.492 U
Propylene			**1.68**	**1.28**	**1.18**	**25.2** J	**23.9** J	**27.4** J	**22.2** J	**0.24**	N/A	N/A	**24.765** J	**23.465** J
Styrene	3,300	1,000	**0.487**	**1.49**	**1.23**	0.426 U	0.426 U	0.426 U	0.426 U	**0.487**	**1.49**	**1.23**	0.426 U	0.426 U

Table 1 - Analytical Results for Indoor and Ambient Air Samples

Sample ID Sampling Date	Modified MTCA Method B Cleanup Level[a]	MTCA Method C Cleanup Level	IA-1 3/11/2020	IA-2 3/11/2020	IA-3 3/11/2020	IA-4 2/21/2020	IA-5 2/21/2020	IA-6 2/21/2020	IA-7 2/21/2020	IA-1 (corrected)[b] 3/11/2020	IA-2 (corrected)[b] 3/11/2020	IA-3 (corrected)[b] 3/11/2020	IA-4 (corrected)[c] 2/21/2020	IA-5 (corrected)[c] 2/21/2020
Methyl tert-butyl ether	32	96	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U	0.361 U
Tetrachloroethene	32	40	**0.712**	0.339 U	0.339 U	0.339 U	**0.369**	0.339 U	0.339 U	**0.063**	0.339 U	0.339 U	0.339 U	**0.369**
Tetrahydrofuran			0.295 U	0.295 U	0.295 U	**0.461**	**1.6**	**0.335**	**0.728**	0.295 U	0.295 U	0.295 U	**0.461**	**1.6**
Toluene	17,000	5,000	**64.9** J	**4.64**	**3.74**	**8.07**	**8.66**	**8.43**	**6.98**	**63.53** J	**3.27**	**2.37**	**3.89**	**4.48**
trans-1,2-Dichloroethene			0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U	0.198 U
trans-1,3-Dichloropropene			0.567 U	0.567 U	0.567 U	0.567 U	0.567 U	0.567 U	0.567 U	0.567 U	0.567 U	0.567 U	0.567 U	0.567 U
Trichloroethene	2[a]	2[a]	0.0872 U	**0.393**	**0.142**	**1.71**	**2.17**	**1.15**	**0.947**	0.0872 U	**0.393**	**0.142**	**1.524**	**1.984**
Freon 11	2,300	700	**1.68**	**1.58**	**1.53**	**1.3**	**1.55**	**1.22**	**1.78**	**0.12**	**0.02**	N/A	N/A	**0.01**
Vinyl Acetate	670	200	0.88 U	**2.5**	**2.33**	0.88 U	**1.14**	**1.72**	0.88 U	0.88 U	**2.5**	**2.33**	0.88 U	**1.14**
Vinyl Chloride	0.94	2.8	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U	0.0685 U
Xylenes	330	100	**1.664**	**2.924**	**2.609**	**3.79**	**3.53**	**4.04**	**2.926**	**1.664**	**2.924**	**2.609**	**0.587**	**0.327**

Table 1 - Analytical Results for Indoor and Ambient Air Samples

Sample ID Sampling Date	Modified MTCA Method B Cleanup Level[a]	MTCA Method C Cleanup Level	IA-6 (corrected)[c] 2/21/2020	IA-7 (corrected)[c] 2/21/2020	UA-1 3/11/2020	UA-2 2/21/2020
VOCs by EPA-TO-15 in µg/m^3						
1,1,1-Trichloroethane	17,000	5,000	0.546 U	0.546 U	0.546 U	0.546 U
1,1,2,2-Tetrachloroethane	0.14	0.43	*0.515 U*	*0.515 U*	*0.515 U*	*0.515 U*
CFC 113	17,000	5,000	0.766 U	0.766 U	0.766 U	0.766 U
1,1,2-Trichloroethane	0.52	0.2	*0.682 U*	*0.682 U*	*0.682 U*	*0.682 U*
1,1-Dichloroethane	5.2	16	0.202 U	0.202 U	0.202 U	0.202 U
1,1-Dichloroethene	670	200	0.397 U	0.397 U	0.397 U	0.397 U
1,2,4-Trichlorobenzene	6.7	2	0.557 U	0.557 U	0.557 U	0.557 U
1,2,4-Trimethylbenzene	200	60	**0.401**	0.369 U	0.369 U	**0.536**
1,2-Dibromoethane (EDB)	0.01	0.042	*0.384 U*	*0.384 U*	*0.384 U*	*0.384 U*
1,2-Dichlorobenzene	670	200	0.601 U	0.601 U	0.601 U	0.601 U
1,2-Dichloroethane	0.32	0.96	0.202 U	0.202 U	0.202 U	0.202 U
1,2-Dichloropropane	2.2	4	0.578 U	0.578 U	0.578 U	0.578 U
1,3,5-Trimethylbenzene			0.369 U	0.369 U	0.369 U	0.369 U
1,3-Butadiene	0.28	0.83	0.277 U	0.277 U	0.277 U	0.277 U
1,3-Dichlorobenzene			**40.9** J	0.451 U	0.451 U	0.451 U
1,4-Dichlorobenzene	0.76	2.3	**43.3** J	**7.06**	0.451 U	0.451 U
1,4-Dioxane			0.36 U	0.36 U	0.36 U	0.36 U
2-Butanone (Methyl Ethyl Ketone)	17,000	5,000	**1.39**	**3.01**	**0.739**	**1.83**
2-Hexanone			1.02 U	1.02 U	1.02 U	1.02 U
Isopropyl alcohol			**1.88**	**3.51**	**0.691**	0.614 U
4-Methyl-2-pentanone	10,000	3,000	1.02 U	1.02 U	1.02 U	1.02 U
Acetone			**13.6**	**8.9** J	**3.95** J	**10.2**
Acrolein	0.07	0.02	**0.108**	**0.355**	**0.47**	**0.608**
Benzene	1.1	3.2	N/A	**0.11**	**0.503**	**1.28**
Benzyl chloride	0.17	0.51	*0.647 U*	*0.647 U*	*0.647 U*	*0.647 U*
Dichlorobromomethane	0.224	0.676	*0.502 U*	*0.502 U*	*0.502 U*	*0.502 U*
Bromoform	7.6	23	0.517 U	0.517 U	0.517 U	0.517 U
Bromomethane	17	5	0.485 U	0.485 U	0.485 U	0.485 U
Carbon Disulfide	2,300	700	1.17 U	1.17 U	1.17 U	1.17 U
Carbon Tetrachloride	1.4	4.2	N/A	**0.094**	**0.584**	**0.593**
Chlorobenzene	170	50	0.23 U	0.23 U	0.23 U	0.23 U
Dibromochloromethane			1.06 U	1.06 U	1.06 U	1.06 U
Chloroethane	33,000	10,000	0.264 U	0.264 U	0.264 U	0.264 U
Chloroform	0.36	1.1	0.244 U	0.244 U	0.244 U	0.244 U
Chloromethane	300	90	**0.35**	**0.26**	**1.55**	**1.34**
cis-1,2-Dichloroethene			0.198 U	0.198 U	0.198 U	0.198 U
cis-1,3-Dichloropropene			0.454 U	0.454 U	0.454 U	0.454 U
Cyclohexane			N/A	N/A	0.344 U	**0.487**
CFC 12	330	100	**0.42**	**0.45**	**2.78**	**2.76**
CFC 114			0.699 U	0.699 U	0.699 U	0.699 U
Ethyl acetate			0.901 U	0.901 U	0.901 U	0.901 U
Ethyl Benzene	3,300	1,000	**0.09**	N/A	0.434 U	**0.715**
Heptane			**0.42**	**0.42**	0.402 U	**1.02**
Hexachlorobutadiene	0.38	1.1	*2.67 U*	*2.67 U*	*2.67 U*	*2.67 U*
m,p-Xylene			**0.46**	N/A	0.868 U	**2.38**
Methyl methacrylate	2,300	700	0.409 U	0.409 U	0.409 U	**0.816**
Methylene Chloride	830	600	1.74 U	1.74 U	1.74 U	1.74 U
Naphthalene	0.25	0.74	**0.17**	N/A	**0.238** J	**1.34**
n-Hexane	2,300	700	**0.222**	**0.742**	0.352 U	**0.848**
o-Xylene			**0.377**	N/A	0.434 U	**0.823**
4-Ethyltoluene			**0.531**	0.492 U	0.492 U	0.492 U
Propylene			**26.965** J	**21.765** J	**1.44**	**0.435**
Styrene	3,300	1,000	0.426 U	0.426 U	0.426 U	0.426 U

Table 1 - Analytical Results for Indoor and Ambient Air Samples

Sample ID Sampling Date	Modified MTCA Method B Cleanup Level[a]	MTCA Method C Cleanup Level	IA-6 (corrected)[c] 2/21/2020	IA-7 (corrected)[c] 2/21/2020	UA-1 3/11/2020	UA-2 2/21/2020
Methyl tert-butyl ether	32	96	0.361 U	0.361 U	0.361 U	0.361 U
Tetrachloroethene	32	40	0.339 U	0.339 U	**0.649**	0.339 U
Tetrahydrofuran			**0.335**	**0.728**	0.295 U	0.295 U
Toluene	17,000	5,000	**4.25**	**2.8**	**1.37**	**4.18**
trans-1,2-Dichloroethene			0.198 U	0.198 U	0.198 U	0.198 U
trans-1,3-Dichloropropene			0.567 U	0.567 U	0.567 U	0.567 U
Trichloroethene	2[d]	2[d]	**0.964**	**0.761**	0.0872 U	**0.186**
Freon 11	2,300	700	N/A	**0.24**	**1.56**	**1.54**
Vinyl Acetate	670	200	**1.72**	0.88 U	0.88 U	0.88 U
Vinyl Chloride	0.94	2.8	0.0685 U	0.0685 U	0.0685 U	0.0685 U
Xylenes	330	100	**0.837**	N/A	0.868 U	**3.203**

Notes:
µg/m^3 = microgram per cubic meter
MTCA = Model Toxics Control Act
EPA = Environmental Protection Agency
VOCs = Volatile Organic Compounds
N/A = Vapor intrusion is not occurring as the indoor air concentration was less than the ambient air concentration.
U = Not detected at reporting limit indicated.
J = Estimated value.
Detected concentrations are **bolded**.
Non-detected results above the cleanup level are *italicized.*
Corrected concentrations that exceed both modified MTCA Method B and MTCA Method C cleanup levels are shaded orange.
Corrected concentrations that exceed only modified MTCA Method B cleanup levels are shaded blue.
a. Modification for commercial building based on Washington State Department of Ecology's Implementation Memorandom No. 21.
b. Corrected value calculated by subtracting ambient air concentration (UA-1) from indoor air concentration.
c. Corrected value calculated by subtracting ambient air concentration (UA-2) from indoor air concentration.
d. Short-term indoor air action level for workplace scenario (commercial or industrial) is 7.5 µg/m^3.

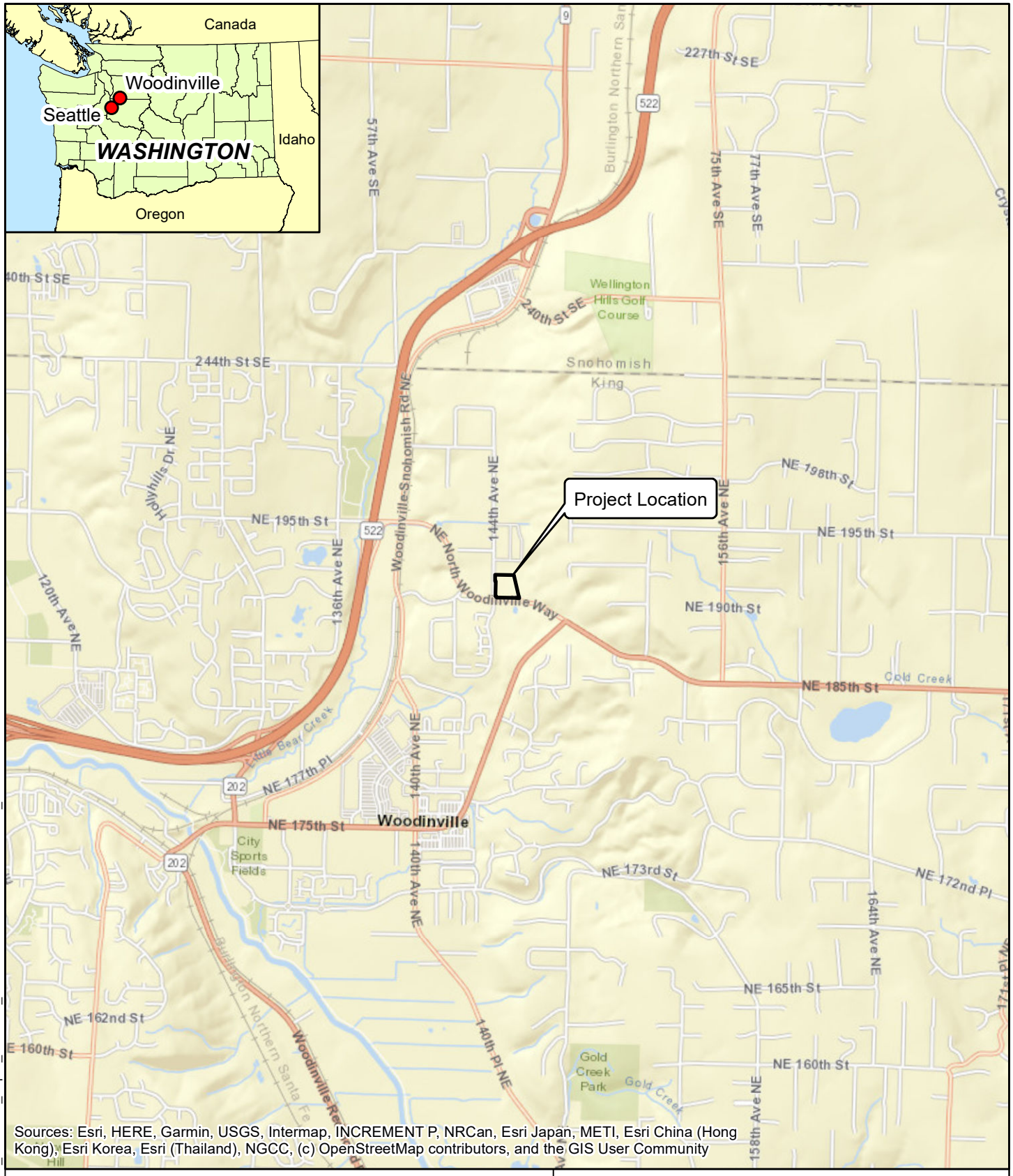
Table 2 - Analytical Results for Soil Vapor Samples

Sample ID Sampling Date	Modified MTCA Method B Screening Level	MTCA Method C Screening Level	SSV-1 5/2/2019	SSV-2 5/2/2019	SSV-3 5/2/2019	SSV-4 5/2/2019	SV-1 3/11/2020	SV-2 3/11/2020	SV-3 3/11/2020	SV-4 2/21/2020	SV-5 2/21/2020	SV-6 2/21/2020	SV-7 2/21/2020
Helium by GC/TCD in ppt													
Helium							157 U	158 U	143 U	100 U	100 U	100 U	100 U
VOCs by EPA-TO-15 in µg/m^3													
1,1,1-Trichloroethane	560,000	170,000	2.2 U	2.2 U	**18.0**	**3.7**	**5.21**	**22.6**	**88.9**	**7.59**	**2.18**	**10.4**	**118** J
1,1,2,2-Tetrachloroethane	4.8	14	2.8 U	2.8 U	2.8 U	2.8 U	*20.6 U*	*20.6 U*	*20.6 U*	*20.6 U*	*20.6 U*	*20.6 U*	*20.6 U*
CFC 113	560,000	170,000	3.1 U	3.1 U	3.1 U	3.1 U	30.7 U	30.7 U	30.7 U	3.07 U	3.07 U	3.07 U	3.07 U
1,1,2-Trichloroethane	17	6.7	2.2 U	2.2 U	2.2 U	2.2 U	*27.3 U*	*27.3 U*	*27.3 U*	2.73 U	2.73 U	2.73 U	2.73 U
1,1-Dichloroethane	174	520	1.6 U	1.6 U	1.6 U	1.6 U	**3.43**	**21.2**	**19.3**	0.81 U	0.81 U	**2.23**	**21.7**
1,1-Dichloroethene	22,000	6,700	1.6 U	**10.1**	1.6 U	1.6 U	**4.47**	**80.4**	**18.7**	1.59 U	1.59 U	1.59 U	**18.2**
1,2,4-Trichlorobenzene	220	67	9.3 U	9.3 U	9.3 U	9.3 U	22.3 U	22.3 U	22.3 U	2.23 U	2.23 U	2.23 U	2.23 U
1,2,4-Trimethylbenzene	6,600	2,000	**10.3**	**21.7**	**17.7**	**3.85**	14.7 U	14.7 U	14.7 U	**4.82**	**3.93**	**4.28**	**4.03**
1,2-Dibromoethane (EDB)	0.46	1.4	*3.1 U*	*3.1 U*	*3.1 U*	*3.1 U*	*15.4 U*	*15.4 U*	*15.4 U*	*1.54 U*	*1.54 U*	*1.54 U*	*1.54 U*
1,2-Dichlorobenzene	22,000	6,700	2.4 U	2.4 U	2.4 U	2.4 U	24 U	24 U	24 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-Dichloroethane	11	32	1.6 U	1.6 U	1.6 U	1.6 U	0.809 U	8.09 U	8.09 U	0.809 U	0.809 U	0.809 U	0.809 U
1,2-Dichloropropane	75	130	1.9 U	1.9 U	1.9 U	1.9 U	23.1 U	23.1 U	23.1 U	2.31 U	2.31 U	2.31 U	2.31 U
1,3,5-Trimethylbenzene			**3.86**	**8.86**	**5.24**	1.96 U	14.7 U	14.7 U	14.7 U	1.47 U	1.47 U	1.47 U	1.47 U
1,3-Butadiene	9.3	28	8.9 U	8.9 U	8.9 U	8.9 U	**4.92**	*11.1 U*	*11.1 U*	1.11 U	1.11 U	1.11 U	1.11 U
1,3-Dichlorobenzene			2.4 U	2.4 U	2.4 U	2.4 U	18 U	**25.4**	**25.3**	**7.34**	**5.41**	**6.25**	**5.17**
1,4-Dichlorobenzene	25	76	**6.4**	**29.0**	**14.6**	**3.4**	18 U	18 U	18 U	**25.4**	**20.1**	**18.3**	**16**
1,4-Dioxane			1.4 U	1.4 U	1.4 U	1.4 U	14.4 U	14.4 U	14.4 U	**1.44**	**1.44**	1.44 U	1.44 U
2,2,4-Trimethylpentane			1.87 U	**4.95**	1.87 U	1.87 U							
2-Butanone (Methyl Ethyl Ketone)	560,000	170,000	**166**	**231**	**283**	**102**	19.9	**173**	**57.6**	**91** J	**2.95** U	**2.95** U	**2.95** U
2-Chlorotoluene			2.1 U	**4.5**	2.1 U	2.1 U							
2-Hexanone			10.2 U	10.2 U	10.2 U	10.2 U	41 U	41 U	41 U	4.1 U	4.1 U	4.1 U	4.1 U
Isopropyl alcohol			6 U	6.2 U	6.2 U	6.2 U	**4600** J	**5790** J	**6640** J	**918** J	**924** J	**913** J	**879** J
Isopropylbenzene	44,000	13,000	2.0 U	2.0 U	2.0 U	2.0							
4-Methyl-2-pentanone	333,000	100,000	10.2 U	10.2 U	10.2 U	10.2 U	41 U	41 U	41 U	**6.6**	**4.1**	**5.33**	**5.33**
Acetone			**20.8**	**22.0**	**54.5**	**17.8**	**80.4**	**598** J	**404**	**134** J	**74.3** J	**168** J	**78.6** J
Acrolein	2	0.67					**2.96**	*11.5 U*	*11.5 U*	**1.6**	**1.15**	**1.26**	**1.83**
Allyl chloride			1.3 U	1.3 U	1.3 U	1.3 U							
Benzene	36	110	1.3 U	**1.5**	1.3 U	1.3 U	**5.81**	**5.73**	**5.79**	**2.33**	**1.69**	**2.11**	**2.84**
Benzyl chloride	5.7	17	2.1 U	2.1 U	2.1 U	2.1 U	*25.9 U*	*25.9 U*	*25.9 U*	2.59 U	2.59 U	2.59 U	2.59 U
Dichlorobromomethane	7.5	23	2.7 U	2.7 U	2.7 U	2.7 U	*20.1 U*	*20.1 U*	*20.1 U*	2.01 U	2.01 U	2.01 U	2.01 U
Bromoform	250	760	12.4 U	12.4 U	12.4 U	12.4 U	20.7 U	20.7 U	20.7 U	2.07 U	2.07 U	2.07 U	2.07 U
Bromomethane	560	170	1.6 U	1.6 U	1.6 U	1.6 U	1.94 U	19.4 U	19.4 U	1.94 U	1.94 U	1.94 U	1.94 U
Carbon Disulfide	78,000	23,000	1.2 U	1.2 U	1.2 U	1.2 U	4.67 U	46.7 U	46.7 U	4.67 U	4.67 U	4.67 U	4.67 U
Carbon Tetrachloride	46	140	2.5 U	2.5 U	2.5 U	2.5 U	0.413 U	4.13 U	4.13 U	0.413 U	0.413 U	0.413 U	0.413 U
Chlorobenzene	5,600	1,700	1.9 U	1.9 U	1.9 U	1.9 U	9.21 U	9.21 U	9.21 U	0.921 U	0.921 U	0.921 U	0.921 U
Dibromochloromethane			3.4 U	3.4 U	3.4 U	3.4 U	42.6 U	42.6 U	42.6 U	4.26 U	4.26 U	4.26 U	4.26 U
Chloroethane	1,100,000	330,000	1.1 U	1.1 U	1.1 U	1.1 U	1.06 U	10.6 U	10.6 U	1.06 U	1.06 U	1.06 U	1.06 U
Chloroform	12	36	2.0 U	2.0 U	**2.2**	2.0 U	0.977 U	**740**	**152**	0.977 U	0.977 U	0.977 U	**2.1**
Chloromethane	1,000	3,000	**1.4**	**1.5**	**3.6**	**1.2**	1.03 U	10.3 U	10.3 U	1.03 U	1.03 U	1.03 U	1.03 U
cis-1,2-Dichloroethene			**44.5**	**561**	**4.1**	1.6 U	**65**	**1970** J	**622**	0.793 U	0.793 U	**7.06**	**53.7**
cis-1,3-Dichloropropene			1.8 U	1.8 U	1.8 U	1.8 U	18.2 U	18.2 U	18.2 U	1.82 U	1.82 U	1.82 U	1.82 U
Cyclohexane			1.4 U	**2.8**	1.4 U	1.4 U	13.8 U	13.8 U	13.8 U	**4.47**	**2.51**	**3.27**	**4.44**
CFC 12	11,000	3,300	**2.2**	**2.2**	**2.3**	**2.2**	1.98 U	19.8 U	19.8 U	**1.98**	**2.03**	1.98 U	**2.03**
CFC 114			2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	28 U	28 U	2.8 U	2.8 U	2.8 U	2.8 U
Ethanol			**31.0**	**33.4**	**18.6**	**17.5**							
Ethyl acetate							3.6 U	36 U	36 U	3.6 U	3.6 U	3.6 U	3.6 U
Ethyl Benzene	110,000	33,000	**9.43**	**7.14**	**9.05**	**3.28**	17.4 U	17.4 U	17.4 U	**2.47**	**1.82**	**2**	**2.26**
Heptane			1.6 U	**2.1**	1.6 U	1.6 U	16.1 U	16.1 U	16.1 U	**5.18**	**3.09**	**4.34**	**5.18**
Hexachlorobutadiene	13	38	*13.5 U*	*13.5*	*13.5 U*	*13.5 U*	*107 U*	*107 U*	*107 U*	10.7 U	10.7 U	10.7 U	10.7 U
m,p-Xylene			**38.5**	**29.7**	**41.8**	**13.2**	34.7 U	34.7 U	34.7 U	**9.73**	**7.47**	**8.42**	**9.03**

Table 2 - Analytical Results for Soil Vapor Samples

Sample ID Sampling Date	Modified MTCA Method B Screening Level	MTCA Method C Screening Level	SSV-1 5/2/2019	SSV-2 5/2/2019	SSV-3 5/2/2019	SSV-4 5/2/2019	SV-1 3/11/2020	SV-2 3/11/2020	SV-3 3/11/2020	SV-4 2/21/2020	SV-5 2/21/2020	SV-6 2/21/2020	SV-7 2/21/2020
Methyl methacrylate	78,000	23,000	1.6 U	1.6 U	1.6 U	1.6 U	16.4 U	16.4 U	16.4 U	1.64 U	1.64 U	1.64 U	1.64 U
Methylene Chloride	28,000	20,000	**2.2**	1.4 U	1.4 U	**12.9**	6.95 U	69.5 U	69.5 U	6.95 U	6.95 U	6.95 U	6.95 U
Naphthalene	8	25	6.6 U	6.6 U	6.6 U	6.6 U	5.24 U	5.24 U	5.24 U	**0.734**	**0.577**	**0.786**	**0.577**
n-Hexane	78,000	23,000	**1.4**	**5.9**	1.4 U	**2.4**	**12.2**	**135**	**29.7**	**5.5**	**3.91**	**3.91**	**7.4**
o-Xylene			**10.4**	**9.46**	**13**	**4.12**	17.4 U	17.4 U	17.4 U	**3.56**	**2.82**	**2.87**	**3.17**
4-Ethyltoluene			**2.2**	**5.0**	**3.9**	2.0 U	19.7 U	19.7 U	19.7 U	1.97 U	1.97 U	1.97 U	1.97 U
Propylene			1.4 U	1.4 U	1.4 U	1.4 U	**72.5** J	**346** J	**206**	**6.85**	**19.9**	**2.56**	**22.1**
Styrene	110,000	33,000	**2.1**	**5.1**	**5.8**	**3.2**	17 U	17 U	17 U	1.7 U	1.7 U	1.7 U	1.7 U
Methyl tert-butyl ether	1,100	3,200	1.4 U	1.4 U	1.4 U	1.4 U	1.44 U	14.4 U	14.4 U	1.44 U	1.44 U	1.44 U	1.44 U
Tetrachloroethene	1,100	1,300	**5.2**	**1240**	**78**	2.7 U	**256**	**63.7**	13.6 U	1.36 U	1.36 U	1.36 U	**1.36**
Tetrahydrofuran			1.2 U	1.2 U	**3.9**	1.2 U	**11.9**	11.8 U	11.8 U	**1.44**	1.18 U	**1.62**	**1.5**
Toluene	560,000	170,000	**17.1**	**18.3**	**12.5**	**6.6**	**18.2**	**37.5**	**34.9**	**19.1**	**13.5**	**18.2**	**19.9**
trans-1,2-Dichloroethene			**3.9**	**45.2**	1.6 U	1.6 U	**10.4**	**391**	**79.2**	0.793 U	0.793 U	**1.35**	**12**
trans-1,3-Dichloropropene			1.8 U	1.8 U	1.8 U	1.8 U	22.7 U	22.7 U	22.7 U	2.27 U	2.27 U	2.27 U	2.27 U
Trichloroethene	67[b]	67[b]	**223**	**990**	**1300**	**29.1**	**142**	**2420** J	**665**	**4.3**	**1.93**	**104**	**506**
Freon 11	78,000	23,000	2.3 U	2.3 U	2.3 U	2.3 U	2.25 U	22.5 U	22.5 U	2.25 U	2.25 U	2.25 U	2.25 U
Vinyl Acetate	22,000	6,700	1.41 U	1.41 U	1.41 U	1.41 U	3.52 U	35.2 U	35.2 U	3.52 U	3.52 U	3.52 U	3.52 U
Vinyl Bromide			1.75 U	1.75 U	1.75 U	1.75 U							
Vinyl Chloride	31	93	1.02 U	**12.4**	1.02 U	1.02 U	**7.66**	**59.7**	**19.2**	0.274 U	0.274 U	0.274 U	**0.716**
Xylenes	11,000	3,300	**49**	**39**	**55**	**17**	34.7 U	34.7 U	34.7 U	**13.29**	**10.29**	**11.29**	**12.2**

Notes:
$\mu g/m^3$ = microgram per cubic meter
ppt = parts per thousand
MTCA = Model Toxics Control Act
EPA = Environmental Protection Agency
VOCs = Volatile Organic Compounds
U = Not detected at reporting limit indicated.
J = Estimated value.
Detected concentrations are **bolded**.
Non-detected results above the screening level are *italicized*.
Concentrations that exceed modified MTCA Method B, MTCA Method C, and short-term non-residential screening levels are shaded yellow.
Concentrations that exceed both modified MTCA Method B and MTCA Method C screening levels are shaded orange.
Concentrations that exceed only modified MTCA Method B screening levels are shaded blue.
Concentrations that exceed only MTCA Method C screening levels are shaded green.
a. Modification for commercial building based on Washington State Department of Ecology's Implementation Memorandum No. 21.
b. Short-term non-residential screening level for sub-slab soil gas is 250 $\mu g/m^3$.



0 1,000 2,000 4,000 Feet

N

Universal Manufacturing
Woodinville, Washington

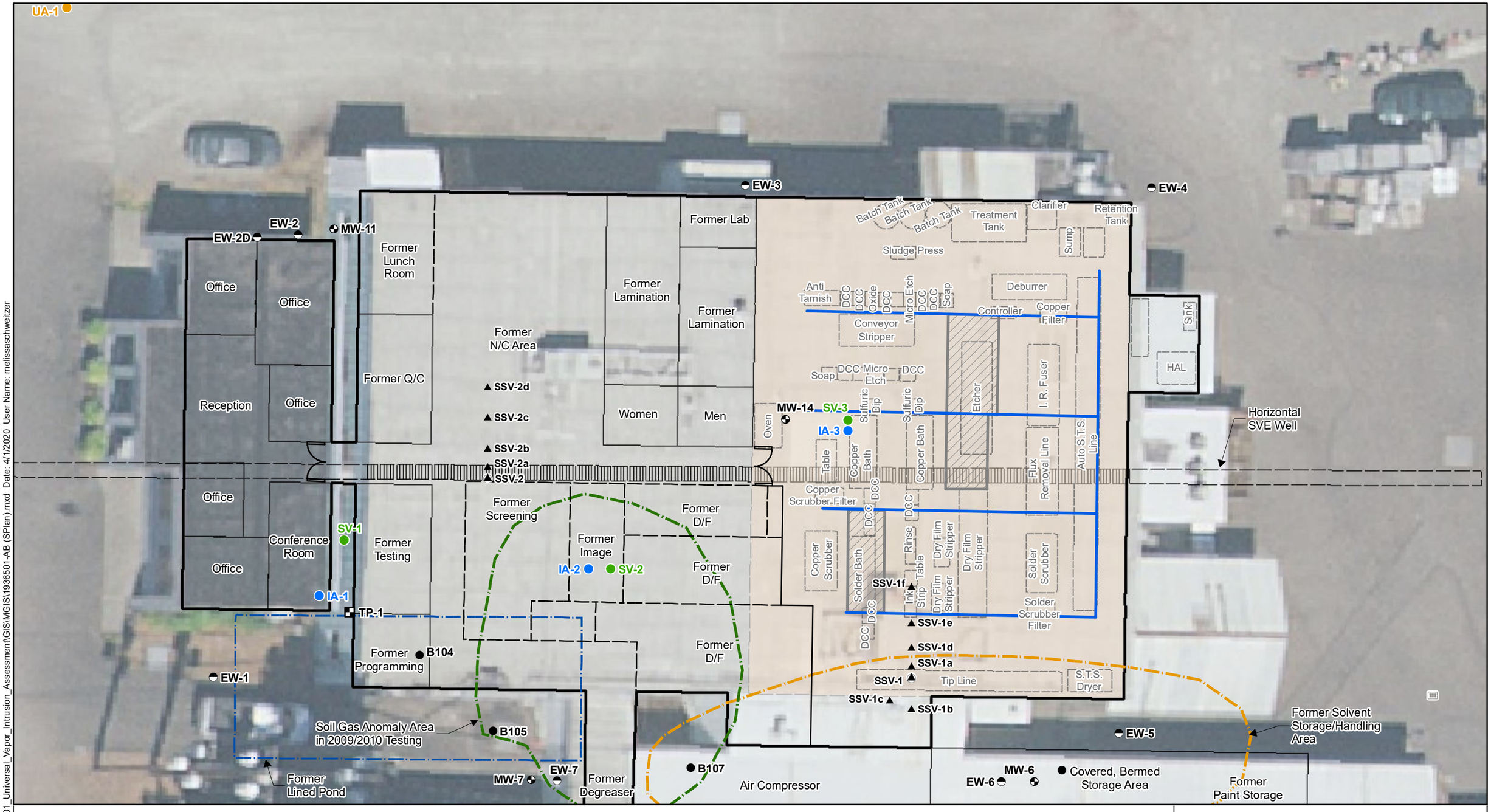
Vicinity Map

19365-01 03/20

HARTCROWSER

Figure 1

Document Path: L:\Notebooks\1936501_Universal_Vapor_Intrusion_Assessment\GIS\MGIS\1936501_VM.mxd Date: 3/25/2020 User Name: evinfairchild



Legend

- Indoor Air Sample
- Soil Vapor Sample
- Upwind Ambient Air Sample
- Monitoring Well
- Dual Phase Extraction Well
- Soil Boring
- Test Pit
- Catch Basin
- Temporary Sub-Slab Vapor Extraction System
- Temporary Sub-Slab Vapor Point
- Drain Line
- Demolished Walls
- Former Lined Pond
- Former Solvent Storage/Handling Area
- Soil Gas Anomaly Area in 2009/2010 Testing
- Patched Concrete Flooring
- Former Equipment
- Building
- Internal Wall
- Former Plating Area

0 7.5 15 30 Feet

Note: Feature locations are approximate.

Sources: Base map information provided by CDM Smith. Aerial photograph provided by Hexagon Imagery Program Data.

N

Universal Manufacturing
Woodinville, Washington

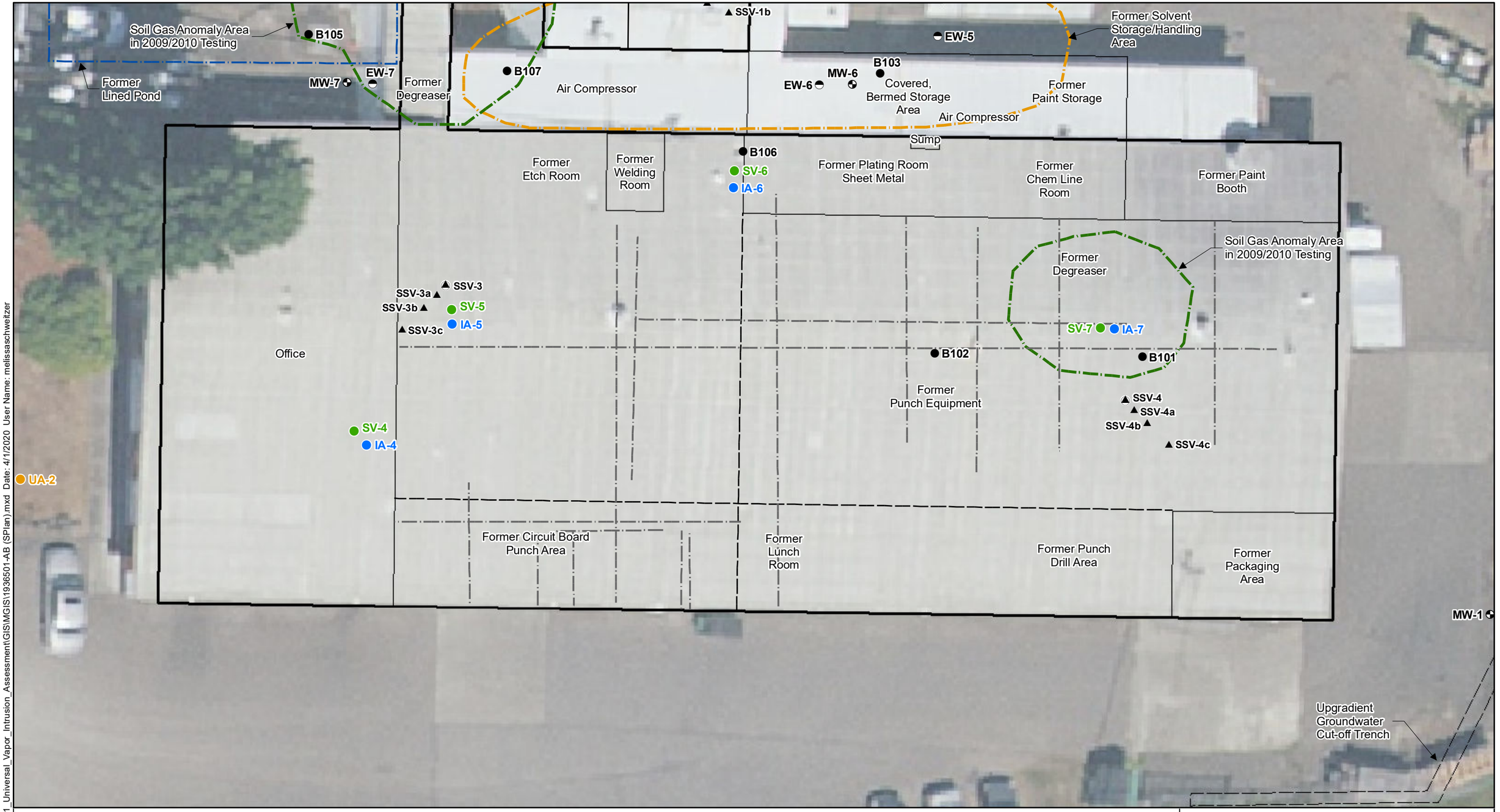
Sampling Plan
Universal Manufacturing Building

19365-01 04/20

HARTCROWSER

Figure 2

Document Path: L:\Notebooks\1936501_Universal_Vapor_Intrusion_Assessment\GIS\MGIS\1936501-AB (SPlan).mxd Date: 4/1/2020 User Name: melissaschweitzer



Legend

- Indoor Air Sample
- Soil Vapor Sample
- Upwind Ambient Air Sample
- Monitoring Well
- Dual Phase Extraction Well
- Soil Boring
- Catch Basin
- Temporary Sub-Slab Vapor Extraction System
- Temporary Sub-Slab Vapor Point
- Crack or Seam
- Demolished Walls
- Former Lined Pond
- Former Solvent Storage/Handling Area
- Soil Gas Anomaly Area in 2009/2010 Testing
- Building
- Internal Wall

0 7.5 15 30 Feet

Note: Feature locations are approximate.

N

Sources: Base map information provided by CDM Smith. Aerial photograph provided by Hexagon Imagery Program Data.

Universal Manufacturing
Woodinville, Washington

Sampling Plan
Universal Sheet Metal Building

19365-01 04/20

HARTCROWSER

Figure 3

Document Path: L:\Notebooks\1936501_Universal_Vapor_Intrusion_Assessment\GIS\MGIS\1936501-AB (SPlan).mxd Date: 4/1/2020 User Name: melissaschweitzer

ATTACHMENT A
Field Investigation Photographs

Photograph 1: Date: February 21, 2020 time: 13:18. Sample location and setup of SV-7 and IA-7 in the eastern area of the USM building.

Photograph 2: Date: February 21, 2020 time: 13:32. Sample location and setup of SV-6 and IA-6 in the north-central area of the USM building, looking north.

Photograph 3: Date: February 21, 2020 time: 13:39. Sample location and setup of SV-5 and IA-5 and large cracks and seams along the western half of the USM building, looking west.

Photograph 4: Date: March 11, 2020 time: 12:59. Sample location and setup of SV-1 in between the office building and main UMC building.

Photograph 5: Date: March 11, 2020 time: 12:52. Sample location and setup of IA-2 and SV-2 in the UMC building, looking south.

Photograph 6: Date: March 11, 2020 time: 12:52. Sample location and setup of SV-3 and IA-3 and patched flooring in background in the eastern section of the UMC building.

ATTACHMENT B
Chemical Data Quality Review and Laboratory Reports

ATTACHMENT B
CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORTS

Chemical Data Quality Review

On February 22, 2020, nine air samples were collected and submitted to Fremont Analytical, Inc. (Fremont) of Seattle, Washington for analysis. Results were reported as Fremont Work Order Number 202404. On March 11, 2020, seven air samples were collected and submitted to Fremont of Seattle, Washington for analysis. Results were reported as Fremont Work Order Number 2003205.

Air samples were analyzed for helium by gas chromatography/thermal conductivity detector (GC/TCD) and/or volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method TO-15.

The laboratory performed ongoing quality assurance/quality control (QA/QC) reviews. Hart Crowser reviewed summary reports to check that they met data quality objectives for the project.

The following criteria were evaluated during the standard data quality review process:

- Holding times;
- Reporting limits;
- Method blanks;
- Surrogate recoveries;
- Laboratory control sample (LCS) recoveries; and
- Laboratory duplicate relative percent difference (RPD).

The data were acceptable for use with qualification. The complete laboratory reports are at the end of this attachment. The data review is summarized below.

Sample Receiving Notes

Sample results were received in an acceptable manor and no results were qualified.

Air Results

Helium by GC/TCD

Holding times and reporting limits were acceptable. No method blank contamination was detected. LCS recoveries were within laboratory control limits. The laboratory duplicate RPDs were not applicable as the sample and/or duplicate results were below the reporting limits.

The data are acceptable for use without qualification.

VOCs by EPA Method TO-15

Holding times were acceptable.

The following were flagged by the laboratory as E (estimated) because the value is above the quantitation range of the instrument:

- Acetone result in SV-2, IA-4, SV-6, SV-5, IA-7, SV-7, SV-4, and IA-5;
- 1,4-dichlorobenzene result in IA-4, IA-5, and IA-6;
- Propylene result in SV-2, IA-4, IA-7, IA-6, and IA-5;
- Isopropyl alcohol result in SV-1, SV-2, SV-3, IA-1, SV-6, SV-5, SV-7, and SV-4;
- 1,1,1-trichloroethane result in SV-7;
- MEK result in SV-4;
- 1,3-dichlorobenzene result in IA-5 and IA-6;
- Toluene result in IA-1; and
- Cis-1,2-dichloroethene and trichloroethene (TCE) results in SV-2.

The E flags were changed to J (estimated) to match Ecology's EIM format.

Reporting limits were acceptable with the following exceptions:

- **2002402.** The reporting limits for 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2-dibromoethane, benzyl chloride, and hexachlorobutadiene in UA-2 and IA-4 through IA-7 exceeded both the modified Model Toxics Control Act (MTCA) Method B and Method C cleanup levels and the reporting limits for dichlorobromomethane exceeded the modified MTCA Method B cleanup level in UA-2 and IA-4 through IA-7 and were italicized in the associated table. The reporting limits for 1,1,2,2-tetrachloroethane and 1,2-dibromoethane in SV-4 through SV-7 exceeded both the modified MTCA Method B and Method C screening levels and were italicized in the associated table.
- **2003205.** The reporting limits for 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2-dibromoethane, benzyl chloride, and hexachlorobutadiene in UA-1 and IA-1 through IA-3 exceeded both the modified MTCA Method B and Method C cleanup levels and the reporting limits for dichlorobromomethane exceeded the modified MTCA Method B cleanup level in UA-1 and IA-1 through IA-3 and were italicized in the associated table. The reporting limits for 1,1,2,2-

tetrachloroethane, 1,1,2-trichloroethane, 1,2-dibromoethane, benzyl chloride, and hexachlorobutadiene in SV-1 through SV-3 and acrolein in SV-2 and SV-3 exceeded both the modified MTCA Method B and Method C screening levels and were italicized in the associated table. The reporting limits for 1,3-butadiene in SV-2 and SV-3 and dichlorobromomethane in SV-1 through SV-3 exceeded the modified MTCA Method B screening level and were italicized in the associated table.

Method blank contamination was not detected with the following exception:

- **2003205.** Propylene was detected in method blank MB-R58119. The propylene result in samples UA-1, IA-3, IA-2, and IA-1 were flagged by the laboratory as B (analyte detected in the associated Method Blank) and as * (flagged value is not within established control limits). The B and * flags were removed because the sample concentrations are greater than five times the concentration in the method blank.

Surrogate recoveries were within laboratory control limits with the following exception:

- **2003205.** The surrogate result for 4-bromoflourobenzene in the method blank was below the laboratory control limit. Sample results were not affected, and no samples were qualified.

LCS recoveries were within laboratory control limits with the following exceptions:

- **2003205.** The LCS recoveries for bromomethane and naphthalene in the low-level scan applicable to samples IA-1 through IA-3 and UA-1 and cyclohexane in the scan applicable to samples SV-1 through SV-3 exceeded the laboratory control limit and were flagged by the laboratory as S due to an outlying spike recovery observed. Samples with detections were qualified by the laboratory with a *. The * flag was changed to a J (estimated) to match Ecology's EIM format.

- **2003205.** The LCS recovery for acetone in the low-level scan applicable to samples IA-1 through IA-3 and UA-1 was lower than the laboratory control limit was flagged by the laboratory as S due to an outlying spike recovery observed. Samples were qualified by the laboratory with a *. The * flag was changed to a J (estimated) to match Ecology's EIM format.

The laboratory duplicate RPDs were either within laboratory control limits or were not applicable as the sample and/or duplicate results were below the reporting limits with the following exceptions:

- **2003205.** The laboratory duplicate RPD for the CFC-12 and chloromethane analyses exceeded laboratory control limits. The laboratory duplicate was a batch QC sample, sample results were not affected, and no samples were qualified.

- **2003205.** The laboratory duplicate RPD for the propylene, acetone, 1,3-dichlorobenzene, and 1,4-dichlorobenzene analyses exceeded laboratory control limits. Propylene was qualified as estimated (J) in the source sample SV-1. The sample and/or duplicate results for acetone, 1,3-dichlorobenzene, and 1,4-dichlorobenzene were less than five times the reporting limits, and sample results for those analyses were not qualified.

- **2002402.** The laboratory duplicate RPDs for the propylene and isopropyl alcohol analyses exceeded laboratory control limits. The laboratory duplicate was a batch QC sample, sample results were not affected, and no samples were qualified.

The data are acceptable for use with qualification.

LABORATORY REPORTS

REPORT 2002402 –
UNIVERSAL SHEET METAL

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

Hart Crowser, Inc.
Marissa Goodman
3131 Elliott Avenue, Suite 600
Seattle, WA 98121

RE: Universal Sheet Metal
Work Order Number: 2002402

March 11, 2020

Attention Marissa Goodman:

Fremont Analytical, Inc. received 9 sample(s) on 2/22/2020 for the analyses presented in the following report.

Helium by GC/TCD
Volatile Organic Compounds by EPA Method TO-15

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: *03/11/2020*

CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal
Work Order: 2002402

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2002402-001	UA-2	02/21/2020 9:17 PM	02/22/2020 10:54 AM
2002402-002	IA-4	02/21/2020 8:56 PM	02/22/2020 10:54 AM
2002402-003	SV-6	02/21/2020 8:15 PM	02/22/2020 10:54 AM
2002402-004	IA-7	02/21/2020 8:27 PM	02/22/2020 10:54 AM
2002402-005	SV-7	02/21/2020 8:01 PM	02/22/2020 10:54 AM
2002402-006	SV-4	02/21/2020 8:58 PM	02/22/2020 10:54 AM
2002402-007	IA-6	02/21/2020 8:31 PM	02/22/2020 10:54 AM
2002402-008	IA-5	02/21/2020 8:37 PM	02/22/2020 10:54 AM
2002402-009	SV-5	02/21/2020 8:38 PM	02/22/2020 10:54 AM

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

Case Narrative

WO#: **2002402**
Date: **3/11/2020**

CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

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

II. GENERAL REPORTING COMMENTS:
Air samples are reported in ppbv and ug/m3.

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 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.

Standard temperature and pressure assumes 24.45 = (25C and 1 atm).

3/11/2020: Revision 1 includes corrected Isopropyl Alcohol detections.

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 (<20%RSD, <20% Drift or minimum RRF)
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
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

Lab ID: 2002402-003 **Collection Date:** 2/21/2020 8:15:00 PM
Client Sample ID: **SV-6** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R57816		Analyst: WC
Helium	ND	100		ppt	1	3/5/2020 3:57:00 PM

NOTES:
ppt = parts per thousand

Lab ID: 2002402-005 **Collection Date:** 2/21/2020 8:01:00 PM
Client Sample ID: **SV-7** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R57816		Analyst: WC
Helium	ND	100		ppt	1	3/5/2020 4:03:00 PM

NOTES:
ppt = parts per thousand

Lab ID: 2002402-006 **Collection Date:** 2/21/2020 8:58:00 PM
Client Sample ID: **SV-4** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R57816		Analyst: WC
Helium	ND	100		ppt	1	3/5/2020 4:10:00 PM

NOTES:
ppt = parts per thousand

Analytical Report

Work Order: **2002402**
Date Reported: **3/11/2020**

CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

Lab ID: 2002402-009 **Collection Date:** 2/21/2020 8:38:00 PM
Client Sample ID: **SV-5** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R57816		Analyst: WC
Helium	ND	100		ppt	1	3/5/2020 4:16:00 PM

NOTES:
ppt = parts per thousand

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: UA-2
Lab ID: 2002402-001A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	02/29/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	02/29/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	02/29/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	02/29/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	02/29/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	02/29/2020	AD
1,2,4-Trimethylbenzene	0.109	0.536	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	02/29/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	02/29/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	02/29/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	02/29/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/29/2020	AD
1,4-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/29/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	02/29/2020	AD
(MEK) 2-Butanone	0.620	1.83	0.250	0.737		EPA-TO-15	02/29/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Isopropyl Alcohol	<0.250	<0.614	0.250	0.614		EPA-TO-15	02/29/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Acetone	4.28	10.2	0.250	0.594		EPA-TO-15	02/29/2020	AD
Acrolein	0.265	0.608	0.125	0.287		EPA-TO-15	02/29/2020	AD
Benzene	0.399	1.28	0.0224	0.0715		EPA-TO-15	02/29/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	02/29/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	02/29/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	02/29/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	02/29/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	02/29/2020	AD
Carbon tetrachloride	0.0942	0.593	0.0164	0.103		EPA-TO-15	02/29/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: UA-2
Lab ID: 2002402-001A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	02/29/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	02/29/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	02/29/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	02/29/2020	AD
Chloromethane	0.647	1.34	0.125	0.258		EPA-TO-15	02/29/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	02/29/2020	AD
Cyclohexane	0.142	0.487	0.100	0.344		EPA-TO-15	02/29/2020	AD
Dichlorodifluoromethane (CFC-12)	0.559	2.76	0.100	0.495		EPA-TO-15	02/29/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	02/29/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	02/29/2020	AD
Ethylbenzene	0.165	0.715	0.100	0.434		EPA-TO-15	02/29/2020	AD
Heptane	0.254	1.02	0.100	0.402		EPA-TO-15	02/29/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	02/29/2020	AD
m,p-Xylene	0.548	2.38	0.200	0.868		EPA-TO-15	02/29/2020	AD
Methyl methacrylate	0.199	0.816	0.100	0.409		EPA-TO-15	02/29/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	02/29/2020	AD
Naphthalene	0.255	1.34	0.0250	0.131		EPA-TO-15	02/29/2020	AD
n-Hexane	0.241	0.848	0.100	0.352		EPA-TO-15	02/29/2020	AD
o-Xylene	0.190	0.823	0.100	0.434		EPA-TO-15	02/29/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	02/29/2020	AD
Propylene	0.253	0.435	0.100	0.172	*	EPA-TO-15	02/29/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	02/29/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	02/29/2020	AD
Tetrachloroethene (PCE)	<0.0500	<0.339	0.0500	0.339		EPA-TO-15	02/29/2020	AD
Tetrahydrofuran	<0.100	<0.295	0.100	0.295		EPA-TO-15	02/29/2020	AD
Toluene	1.11	4.18	0.100	0.377		EPA-TO-15	02/29/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	02/29/2020	AD
Trichloroethene (TCE)	0.0346	0.186	0.0162	0.0872		EPA-TO-15	02/29/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: UA-2
Lab ID: 2002402-001A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Trichlorofluoromethane (CFC-11)	0.274	1.54	0.100	0.562		EPA-TO-15	02/29/2020	AD
Vinyl acetate	<0.250	<0.880	0.250	0.880		EPA-TO-15	02/29/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	02/29/2020	AD
Surr: 4-Bromofluorobenzene	95.4 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	AD

NOTES:
* - Flagged value is not within established control limits.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-4
Lab ID: 2002402-002A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	02/29/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	02/29/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	02/29/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	02/29/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	02/29/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	02/29/2020	AD
1,2,4-Trimethylbenzene	0.190	0.933	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	02/29/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	02/29/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	02/29/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	02/29/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/29/2020	AD
1,4-Dichlorobenzene	7.88	47.4	0.0750	0.451	E	EPA-TO-15	02/29/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	02/29/2020	AD
(MEK) 2-Butanone	1.01	2.99	0.250	0.737		EPA-TO-15	02/29/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Isopropyl Alcohol	0.703	1.73	0.250	0.614		EPA-TO-15	02/29/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Acetone	6.05	14.4	0.250	0.594	E	EPA-TO-15	02/29/2020	AD
Acrolein	0.366	0.840	0.125	0.287		EPA-TO-15	02/29/2020	AD
Benzene	0.345	1.10	0.0224	0.0715		EPA-TO-15	02/29/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	02/29/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	02/29/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	02/29/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	02/29/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	02/29/2020	AD
Carbon tetrachloride	0.0801	0.504	0.0164	0.103		EPA-TO-15	02/29/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-4
Lab ID: 2002402-002A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	02/29/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	02/29/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	02/29/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	02/29/2020	AD
Chloromethane	0.563	1.16	0.125	0.258		EPA-TO-15	02/29/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	02/29/2020	AD
Cyclohexane	0.156	0.538	0.100	0.344		EPA-TO-15	02/29/2020	AD
Dichlorodifluoromethane (CFC-12)	0.468	2.31	0.100	0.495		EPA-TO-15	02/29/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	02/29/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	02/29/2020	AD
Ethylbenzene	0.171	0.742	0.100	0.434		EPA-TO-15	02/29/2020	AD
Heptane	0.329	1.32	0.100	0.402		EPA-TO-15	02/29/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	02/29/2020	AD
m,p-Xylene	0.619	2.69	0.200	0.868		EPA-TO-15	02/29/2020	AD
Methyl methacrylate	0.248	1.02	0.100	0.409		EPA-TO-15	02/29/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	02/29/2020	AD
Naphthalene	0.290	1.52	0.0250	0.131		EPA-TO-15	02/29/2020	AD
n-Hexane	0.403	1.42	0.100	0.352		EPA-TO-15	02/29/2020	AD
o-Xylene	0.253	1.10	0.100	0.434		EPA-TO-15	02/29/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	02/29/2020	AD
Propylene	14.7	25.2	0.100	0.172	E*	EPA-TO-15	02/29/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	02/29/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	02/29/2020	AD
Tetrachloroethene (PCE)	<0.0500	<0.339	0.0500	0.339		EPA-TO-15	02/29/2020	AD
Tetrahydrofuran	0.156	0.461	0.100	0.295		EPA-TO-15	02/29/2020	AD
Toluene	2.14	8.07	0.100	0.377		EPA-TO-15	02/29/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	02/29/2020	AD
Trichloroethene (TCE)	0.318	1.71	0.0162	0.0872		EPA-TO-15	02/29/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-4
Lab ID: 2002402-002A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Trichlorofluoromethane (CFC-11)	0.231	1.30	0.100	0.562		EPA-TO-15	02/29/2020	AD
Vinyl acetate	<0.250	<0.880	0.250	0.880		EPA-TO-15	02/29/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	02/29/2020	AD
Surr: 4-Bromofluorobenzene	101 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	AD

NOTES:
* - Flagged value is not within established control limits.
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-6
Lab ID: 2002402-003A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	1.91	10.4	0.400	2.18		EPA-TO-15	02/29/2020	WC
1,1,2,2-Tetrachloroethane	<0.300	<2.06	0.300	2.06		EPA-TO-15	02/29/2020	WC
CFC-113	<0.400	<3.07	0.400	3.07		EPA-TO-15	02/29/2020	WC
1,1,2-Trichloroethane (TCA)	<0.500	<2.73	0.500	2.73		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethane	0.550	2.23	0.200	0.810		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethene (DCE)	<0.400	<1.59	0.400	1.59		EPA-TO-15	02/29/2020	WC
1,2,4-Trichlorobenzene	<0.300	<2.23	0.300	2.23		EPA-TO-15	02/29/2020	WC
1,2,4-Trimethylbenzene	0.870	4.28	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,2-Dibromoethane (EDB)	<0.200	<1.54	0.200	1.54		EPA-TO-15	02/29/2020	WC
1,2-Dichlorobenzene	<0.400	<2.40	0.400	2.40		EPA-TO-15	02/29/2020	WC
1,2-Dichloroethane	<0.200	<0.809	0.200	0.809		EPA-TO-15	02/29/2020	WC
1,2-Dichloropropane	<0.500	<2.31	0.500	2.31		EPA-TO-15	02/29/2020	WC
1,3,5-Trimethylbenzene	<0.300	<1.47	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,3-Butadiene	<0.500	<1.11	0.500	1.11		EPA-TO-15	02/29/2020	WC
1,3-Dichlorobenzene	1.04	6.25	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dichlorobenzene	3.05	18.3	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dioxane	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
(MEK) 2-Butanone	<1.00	<2.95	1.00	2.95		EPA-TO-15	02/29/2020	WC
2-Hexanone	<1.00	<4.10	1.00	4.10		EPA-TO-15	02/29/2020	WC
Isopropyl Alcohol	371	913	1.00	2.46	E	EPA-TO-15	02/29/2020	WC
4-Methyl-2-pentanone (MIBK)	1.30	5.33	1.00	4.10		EPA-TO-15	02/29/2020	WC
Acetone	70.8	168	1.00	2.38	E	EPA-TO-15	02/29/2020	WC
Acrolein	0.550	1.26	0.500	1.15		EPA-TO-15	02/29/2020	WC
Benzene	0.660	2.11	0.0895	0.286		EPA-TO-15	02/29/2020	WC
Benzyl chloride	<0.500	<2.59	0.500	2.59		EPA-TO-15	02/29/2020	WC
Dichlorobromomethane	<0.300	<2.01	0.300	2.01		EPA-TO-15	02/29/2020	WC
Bromoform	<0.200	<2.07	0.200	2.07		EPA-TO-15	02/29/2020	WC
Bromomethane	<0.500	<1.94	0.500	1.94		EPA-TO-15	02/29/2020	WC
Carbon disulfide	<1.50	<4.67	1.50	4.67		EPA-TO-15	02/29/2020	WC
Carbon tetrachloride	<0.0657	<0.413	0.0657	0.413		EPA-TO-15	02/29/2020	WC

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-6
Lab ID: 2002402-003A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.200	<0.921	0.200	0.921		EPA-TO-15	02/29/2020	WC
Dibromochloromethane	<0.500	<4.26	0.500	4.26		EPA-TO-15	02/29/2020	WC
Chloroethane	<0.400	<1.06	0.400	1.06		EPA-TO-15	02/29/2020	WC
Chloroform	<0.200	<0.977	0.200	0.977		EPA-TO-15	02/29/2020	WC
Chloromethane	<0.500	<1.03	0.500	1.03		EPA-TO-15	02/29/2020	WC
cis-1,2-Dichloroethene	1.78	7.06	0.200	0.793		EPA-TO-15	02/29/2020	WC
cis-1,3-dichloropropene	<0.400	<1.82	0.400	1.82		EPA-TO-15	02/29/2020	WC
Cyclohexane	0.950	3.27	0.400	1.38		EPA-TO-15	02/29/2020	WC
Dichlorodifluoromethane (CFC-12)	<0.400	<1.98	0.400	1.98		EPA-TO-15	02/29/2020	WC
Dichlorotetrafluoroethane (CFC-114)	<0.400	<2.80	0.400	2.80		EPA-TO-15	02/29/2020	WC
Ethyl acetate	<1.00	<3.60	1.00	3.60		EPA-TO-15	02/29/2020	WC
Ethylbenzene	0.460	2.00	0.400	1.74		EPA-TO-15	02/29/2020	WC
Heptane	1.08	4.34	0.400	1.61		EPA-TO-15	02/29/2020	WC
Hexachlorobutadiene	<1.00	<10.7	1.00	10.7		EPA-TO-15	02/29/2020	WC
m,p-Xylene	1.94	8.42	0.800	3.47		EPA-TO-15	02/29/2020	WC
Methyl methacrylate	<0.400	<1.64	0.400	1.64		EPA-TO-15	02/29/2020	WC
Methylene chloride	<2.00	<6.95	2.00	6.95		EPA-TO-15	02/29/2020	WC
Naphthalene	0.150	0.786	0.100	0.524		EPA-TO-15	02/29/2020	WC
n-Hexane	1.11	3.91	0.400	1.41		EPA-TO-15	02/29/2020	WC
o-Xylene	0.660	2.87	0.400	1.74		EPA-TO-15	02/29/2020	WC
4-Ethyltoluene	<0.400	<1.97	0.400	1.97		EPA-TO-15	02/29/2020	WC
Propylene	1.49	2.56	0.400	0.688		EPA-TO-15	02/29/2020	WC
Styrene	<0.400	<1.70	0.400	1.70		EPA-TO-15	02/29/2020	WC
Methyl tert-butyl ether (MTBE)	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
Tetrachloroethene (PCE)	<0.200	<1.36	0.200	1.36		EPA-TO-15	02/29/2020	WC
Tetrahydrofuran	0.550	1.62	0.400	1.18		EPA-TO-15	02/29/2020	WC
Toluene	4.83	18.2	0.400	1.51		EPA-TO-15	02/29/2020	WC
trans-1,2-Dichloroethene	0.340	1.35	0.200	0.793		EPA-TO-15	02/29/2020	WC
trans-1,3-dichloropropene	<0.500	<2.27	0.500	2.27		EPA-TO-15	02/29/2020	WC
Trichloroethene (TCE)	19.4	104	0.0649	0.349		EPA-TO-15	02/29/2020	WC

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-6
Lab ID: 2002402-003A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	<0.400	<2.25	0.400	2.25		EPA-TO-15	02/29/2020	WC
Vinyl acetate	<1.00	<3.52	1.00	3.52		EPA-TO-15	02/29/2020	WC
Vinyl chloride	<0.107	<0.274	0.107	0.274		EPA-TO-15	02/29/2020	WC
Surr: 4-Bromofluorobenzene	99.5 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	WC

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-7
Lab ID: 2002402-004A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	02/29/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	02/29/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	02/29/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	03/05/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	02/29/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	02/29/2020	AD
1,2,4-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	03/05/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	02/29/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	03/05/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	02/29/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/29/2020	AD
1,4-Dichlorobenzene	1.17	7.06	0.0750	0.451		EPA-TO-15	02/29/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	03/05/2020	AD
(MEK) 2-Butanone	1.64	4.84	0.250	0.737		EPA-TO-15	02/29/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Isopropyl Alcohol	1.43	3.51	0.250	0.614		EPA-TO-15	02/29/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Acetone	8.03	19.1	0.250	0.594	E	EPA-TO-15	02/29/2020	AD
Acrolein	0.420	0.963	0.125	0.287		EPA-TO-15	02/29/2020	AD
Benzene	0.435	1.39	0.0224	0.0715		EPA-TO-15	02/29/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	02/29/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	03/05/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	02/29/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	02/29/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	02/29/2020	AD
Carbon tetrachloride	0.109	0.687	0.0164	0.103		EPA-TO-15	02/29/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-7
Lab ID: 2002402-004A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	02/29/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	03/05/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	02/29/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	02/29/2020	AD
Chloromethane	0.777	1.60	0.125	0.258		EPA-TO-15	02/29/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	03/05/2020	AD
Cyclohexane	0.125	0.430	0.100	0.344		EPA-TO-15	03/05/2020	AD
Dichlorodifluoromethane (CFC-12)	0.648	3.21	0.100	0.495		EPA-TO-15	02/29/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	02/29/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	02/29/2020	AD
Ethylbenzene	0.158	0.687	0.100	0.434		EPA-TO-15	02/29/2020	AD
Heptane	0.358	1.44	0.100	0.402		EPA-TO-15	02/29/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	02/29/2020	AD
m,p-Xylene	0.487	2.11	0.200	0.868		EPA-TO-15	02/29/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	03/05/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	02/29/2020	AD
Naphthalene	0.225	1.18	0.0250	0.131		EPA-TO-15	02/29/2020	AD
n-Hexane	0.452	1.59	0.100	0.352		EPA-TO-15	02/29/2020	AD
o-Xylene	0.188	0.816	0.100	0.434		EPA-TO-15	02/29/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	02/29/2020	AD
Propylene	12.9	22.2	0.100	0.172	E*	EPA-TO-15	02/29/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	02/29/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	02/29/2020	AD
Tetrachloroethene (PCE)	<0.0500	<0.339	0.0500	0.339		EPA-TO-15	03/05/2020	AD
Tetrahydrofuran	0.247	0.728	0.100	0.295		EPA-TO-15	02/29/2020	AD
Toluene	1.85	6.98	0.100	0.377		EPA-TO-15	03/05/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	03/05/2020	AD
Trichloroethene (TCE)	0.176	0.947	0.0162	0.0872		EPA-TO-15	03/05/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-7
Lab ID: 2002402-004A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	0.317	1.78	0.100	0.562		EPA-TO-15	02/29/2020	AD
Vinyl acetate	<0.250	<0.880	0.250	0.880		EPA-TO-15	02/29/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	02/29/2020	AD
Surr: 4-Bromofluorobenzene	100 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	AD

NOTES:
* - Flagged value is not within established control limits.
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-7
Lab ID: 2002402-005A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	21.6	118	0.400	2.18	E	EPA-TO-15	02/29/2020	WC
1,1,2,2-Tetrachloroethane	<0.300	<2.06	0.300	2.06		EPA-TO-15	02/29/2020	WC
CFC-113	<0.400	<3.07	0.400	3.07		EPA-TO-15	02/29/2020	WC
1,1,2-Trichloroethane (TCA)	<0.500	<2.73	0.500	2.73		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethane	5.36	21.7	0.200	0.810		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethene (DCE)	4.59	18.2	0.400	1.59		EPA-TO-15	02/29/2020	WC
1,2,4-Trichlorobenzene	<0.300	<2.23	0.300	2.23		EPA-TO-15	02/29/2020	WC
1,2,4-Trimethylbenzene	0.820	4.03	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,2-Dibromoethane (EDB)	<0.200	<1.54	0.200	1.54		EPA-TO-15	02/29/2020	WC
1,2-Dichlorobenzene	<0.400	<2.40	0.400	2.40		EPA-TO-15	02/29/2020	WC
1,2-Dichloroethane	<0.200	<0.809	0.200	0.809		EPA-TO-15	02/29/2020	WC
1,2-Dichloropropane	<0.500	<2.31	0.500	2.31		EPA-TO-15	02/29/2020	WC
1,3,5-Trimethylbenzene	<0.300	<1.47	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,3-Butadiene	<0.500	<1.11	0.500	1.11		EPA-TO-15	02/29/2020	WC
1,3-Dichlorobenzene	0.860	5.17	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dichlorobenzene	2.66	16.0	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dioxane	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
(MEK) 2-Butanone	<1.00	<2.95	1.00	2.95		EPA-TO-15	02/29/2020	WC
2-Hexanone	<1.00	<4.10	1.00	4.10		EPA-TO-15	02/29/2020	WC
Isopropyl Alcohol	357	879	1.00	2.46	E	EPA-TO-15	02/29/2020	WC
4-Methyl-2-pentanone (MIBK)	1.30	5.33	1.00	4.10		EPA-TO-15	02/29/2020	WC
Acetone	33.1	78.6	1.00	2.38	E	EPA-TO-15	02/29/2020	WC
Acrolein	0.800	1.83	0.500	1.15		EPA-TO-15	02/29/2020	WC
Benzene	0.890	2.84	0.0895	0.286		EPA-TO-15	02/29/2020	WC
Benzyl chloride	<0.500	<2.59	0.500	2.59		EPA-TO-15	02/29/2020	WC
Dichlorobromomethane	<0.300	<2.01	0.300	2.01		EPA-TO-15	02/29/2020	WC
Bromoform	<0.200	<2.07	0.200	2.07		EPA-TO-15	02/29/2020	WC
Bromomethane	<0.500	<1.94	0.500	1.94		EPA-TO-15	02/29/2020	WC
Carbon disulfide	<1.50	<4.67	1.50	4.67		EPA-TO-15	02/29/2020	WC
Carbon tetrachloride	<0.0657	<0.413	0.0657	0.413		EPA-TO-15	02/29/2020	WC

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-7
Lab ID: 2002402-005A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.200	<0.921	0.200	0.921		EPA-TO-15	02/29/2020	WC
Dibromochloromethane	<0.500	<4.26	0.500	4.26		EPA-TO-15	02/29/2020	WC
Chloroethane	<0.400	<1.06	0.400	1.06		EPA-TO-15	02/29/2020	WC
Chloroform	0.430	2.10	0.200	0.977		EPA-TO-15	02/29/2020	WC
Chloromethane	<0.500	<1.03	0.500	1.03		EPA-TO-15	02/29/2020	WC
cis-1,2-Dichloroethene	13.5	53.7	0.200	0.793		EPA-TO-15	02/29/2020	WC
cis-1,3-dichloropropene	<0.400	<1.82	0.400	1.82		EPA-TO-15	02/29/2020	WC
Cyclohexane	1.29	4.44	0.400	1.38		EPA-TO-15	02/29/2020	WC
Dichlorodifluoromethane (CFC-12)	0.410	2.03	0.400	1.98		EPA-TO-15	02/29/2020	WC
Dichlorotetrafluoroethane (CFC-114)	<0.400	<2.80	0.400	2.80		EPA-TO-15	02/29/2020	WC
Ethyl acetate	<1.00	<3.60	1.00	3.60		EPA-TO-15	02/29/2020	WC
Ethylbenzene	0.520	2.26	0.400	1.74		EPA-TO-15	02/29/2020	WC
Heptane	1.29	5.18	0.400	1.61		EPA-TO-15	02/29/2020	WC
Hexachlorobutadiene	<1.00	<10.7	1.00	10.7		EPA-TO-15	02/29/2020	WC
m,p-Xylene	2.08	9.03	0.800	3.47		EPA-TO-15	02/29/2020	WC
Methyl methacrylate	<0.400	<1.64	0.400	1.64		EPA-TO-15	02/29/2020	WC
Methylene chloride	<2.00	<6.95	2.00	6.95		EPA-TO-15	02/29/2020	WC
Naphthalene	0.110	0.577	0.100	0.524		EPA-TO-15	02/29/2020	WC
n-Hexane	2.10	7.40	0.400	1.41		EPA-TO-15	02/29/2020	WC
o-Xylene	0.730	3.17	0.400	1.74		EPA-TO-15	02/29/2020	WC
4-Ethyltoluene	<0.400	<1.97	0.400	1.97		EPA-TO-15	02/29/2020	WC
Propylene	12.9	22.1	0.400	0.688		EPA-TO-15	02/29/2020	WC
Styrene	<0.400	<1.70	0.400	1.70		EPA-TO-15	02/29/2020	WC
Methyl tert-butyl ether (MTBE)	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
Tetrachloroethene (PCE)	0.200	1.36	0.200	1.36		EPA-TO-15	02/29/2020	WC
Tetrahydrofuran	0.510	1.50	0.400	1.18		EPA-TO-15	02/29/2020	WC
Toluene	5.28	19.9	0.400	1.51		EPA-TO-15	02/29/2020	WC
trans-1,2-Dichloroethene	3.02	12.0	0.200	0.793		EPA-TO-15	02/29/2020	WC
trans-1,3-dichloropropene	<0.500	<2.27	0.500	2.27		EPA-TO-15	02/29/2020	WC
Trichloroethene (TCE)	94.2	506	0.0649	0.349		EPA-TO-15	02/29/2020	WC

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-7
Lab ID: 2002402-005A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	<0.400	<2.25	0.400	2.25		EPA-TO-15	02/29/2020	WC
Vinyl acetate	<1.00	<3.52	1.00	3.52		EPA-TO-15	02/29/2020	WC
Vinyl chloride	0.280	0.716	0.107	0.274		EPA-TO-15	02/29/2020	WC
Surr: 4-Bromofluorobenzene	96.5 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	WC

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-4
Lab ID: 2002402-006A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	1.39	7.59	0.400	2.18		EPA-TO-15	02/29/2020	WC
1,1,2,2-Tetrachloroethane	<0.300	<2.06	0.300	2.06		EPA-TO-15	02/29/2020	WC
CFC-113	<0.400	<3.07	0.400	3.07		EPA-TO-15	02/29/2020	WC
1,1,2-Trichloroethane (TCA)	<0.500	<2.73	0.500	2.73		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethane	<0.200	<0.810	0.200	0.810		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethene (DCE)	<0.400	<1.59	0.400	1.59		EPA-TO-15	02/29/2020	WC
1,2,4-Trichlorobenzene	<0.300	<2.23	0.300	2.23		EPA-TO-15	02/29/2020	WC
1,2,4-Trimethylbenzene	0.980	4.82	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,2-Dibromoethane (EDB)	<0.200	<1.54	0.200	1.54		EPA-TO-15	02/29/2020	WC
1,2-Dichlorobenzene	<0.400	<2.40	0.400	2.40		EPA-TO-15	02/29/2020	WC
1,2-Dichloroethane	<0.200	<0.809	0.200	0.809		EPA-TO-15	02/29/2020	WC
1,2-Dichloropropane	<0.500	<2.31	0.500	2.31		EPA-TO-15	02/29/2020	WC
1,3,5-Trimethylbenzene	<0.300	<1.47	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,3-Butadiene	<0.500	<1.11	0.500	1.11		EPA-TO-15	02/29/2020	WC
1,3-Dichlorobenzene	1.22	7.34	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dichlorobenzene	4.22	25.4	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dioxane	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
(MEK) 2-Butanone	30.9	91.0	1.00	2.95	E	EPA-TO-15	02/29/2020	WC
2-Hexanone	<1.00	<4.10	1.00	4.10		EPA-TO-15	02/29/2020	WC
Isopropyl Alcohol	373	918	1.00	2.46	E	EPA-TO-15	02/29/2020	WC
4-Methyl-2-pentanone (MIBK)	1.61	6.60	1.00	4.10		EPA-TO-15	02/29/2020	WC
Acetone	56.6	134	1.00	2.38	E	EPA-TO-15	02/29/2020	WC
Acrolein	0.700	1.60	0.500	1.15		EPA-TO-15	02/29/2020	WC
Benzene	0.730	2.33	0.0895	0.286		EPA-TO-15	02/29/2020	WC
Benzyl chloride	<0.500	<2.59	0.500	2.59		EPA-TO-15	02/29/2020	WC
Dichlorobromomethane	<0.300	<2.01	0.300	2.01		EPA-TO-15	02/29/2020	WC
Bromoform	<0.200	<2.07	0.200	2.07		EPA-TO-15	02/29/2020	WC
Bromomethane	<0.500	<1.94	0.500	1.94		EPA-TO-15	02/29/2020	WC
Carbon disulfide	<1.50	<4.67	1.50	4.67		EPA-TO-15	02/29/2020	WC
Carbon tetrachloride	<0.0657	<0.413	0.0657	0.413		EPA-TO-15	02/29/2020	WC

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-4
Lab ID: 2002402-006A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.200	<0.921	0.200	0.921		EPA-TO-15	02/29/2020	WC
Dibromochloromethane	<0.500	<4.26	0.500	4.26		EPA-TO-15	02/29/2020	WC
Chloroethane	<0.400	<1.06	0.400	1.06		EPA-TO-15	02/29/2020	WC
Chloroform	<0.200	<0.977	0.200	0.977		EPA-TO-15	02/29/2020	WC
Chloromethane	<0.500	<1.03	0.500	1.03		EPA-TO-15	02/29/2020	WC
cis-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	02/29/2020	WC
cis-1,3-dichloropropene	<0.400	<1.82	0.400	1.82		EPA-TO-15	02/29/2020	WC
Cyclohexane	1.30	4.47	0.400	1.38		EPA-TO-15	02/29/2020	WC
Dichlorodifluoromethane (CFC-12)	0.400	1.98	0.400	1.98		EPA-TO-15	02/29/2020	WC
Dichlorotetrafluoroethane (CFC-114)	<0.400	<2.80	0.400	2.80		EPA-TO-15	02/29/2020	WC
Ethyl acetate	<1.00	<3.60	1.00	3.60		EPA-TO-15	02/29/2020	WC
Ethylbenzene	0.570	2.47	0.400	1.74		EPA-TO-15	02/29/2020	WC
Heptane	1.29	5.18	0.400	1.61		EPA-TO-15	02/29/2020	WC
Hexachlorobutadiene	<1.00	<10.7	1.00	10.7		EPA-TO-15	02/29/2020	WC
m,p-Xylene	2.24	9.73	0.800	3.47		EPA-TO-15	02/29/2020	WC
Methyl methacrylate	<0.400	<1.64	0.400	1.64		EPA-TO-15	02/29/2020	WC
Methylene chloride	<2.00	<6.95	2.00	6.95		EPA-TO-15	02/29/2020	WC
Naphthalene	0.140	0.734	0.100	0.524		EPA-TO-15	02/29/2020	WC
n-Hexane	1.56	5.50	0.400	1.41		EPA-TO-15	02/29/2020	WC
o-Xylene	0.820	3.56	0.400	1.74		EPA-TO-15	02/29/2020	WC
4-Ethyltoluene	<0.400	<1.97	0.400	1.97		EPA-TO-15	02/29/2020	WC
Propylene	3.98	6.85	0.400	0.688		EPA-TO-15	02/29/2020	WC
Styrene	<0.400	<1.70	0.400	1.70		EPA-TO-15	02/29/2020	WC
Methyl tert-butyl ether (MTBE)	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
Tetrachloroethene (PCE)	<0.200	<1.36	0.200	1.36		EPA-TO-15	02/29/2020	WC
Tetrahydrofuran	0.490	1.44	0.400	1.18		EPA-TO-15	02/29/2020	WC
Toluene	5.08	19.1	0.400	1.51		EPA-TO-15	02/29/2020	WC
trans-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	02/29/2020	WC
trans-1,3-dichloropropene	<0.500	<2.27	0.500	2.27		EPA-TO-15	02/29/2020	WC
Trichloroethene (TCE)	0.800	4.30	0.0649	0.349		EPA-TO-15	02/29/2020	WC

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-4
Lab ID: 2002402-006A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	<0.400	<2.25	0.400	2.25		EPA-TO-15	02/29/2020	WC
Vinyl acetate	<1.00	<3.52	1.00	3.52		EPA-TO-15	02/29/2020	WC
Vinyl chloride	<0.107	<0.274	0.107	0.274		EPA-TO-15	02/29/2020	WC
Surr: 4-Bromofluorobenzene	96.0 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	WC

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-6
Lab ID: 2002402-007A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	03/05/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	02/29/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	02/29/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	03/05/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/05/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	03/05/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	02/29/2020	AD
1,2,4-Trimethylbenzene	0.191	0.937	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	03/05/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	02/29/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/05/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	03/05/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	03/05/2020	AD
1,3-Dichlorobenzene	6.80	40.9	0.0750	0.451	E	EPA-TO-15	02/29/2020	AD
1,4-Dichlorobenzene	7.20	43.3	0.0750	0.451	E	EPA-TO-15	02/29/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	03/05/2020	AD
(MEK) 2-Butanone	1.09	3.22	0.250	0.737		EPA-TO-15	03/05/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Isopropyl Alcohol	0.766	1.88	0.250	0.614		EPA-TO-15	03/05/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Acetone	10.0	23.8	0.250	0.594		EPA-TO-15	03/05/2020	AD
Acrolein	0.312	0.716	0.125	0.287		EPA-TO-15	03/05/2020	AD
Benzene	0.304	0.971	0.0224	0.0715		EPA-TO-15	03/05/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	02/29/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	03/05/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	02/29/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485	*	EPA-TO-15	03/05/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	03/05/2020	AD
Carbon tetrachloride	0.0724	0.455	0.0164	0.103		EPA-TO-15	03/05/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-6
Lab ID: 2002402-007A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	02/29/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	03/05/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	03/05/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	03/05/2020	AD
Chloromethane	0.817	1.69	0.125	0.258		EPA-TO-15	02/29/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/05/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	03/05/2020	AD
Cyclohexane	0.133	0.456	0.100	0.344		EPA-TO-15	03/05/2020	AD
Dichlorodifluoromethane (CFC-12)	0.643	3.18	0.100	0.495		EPA-TO-15	02/29/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	03/05/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	03/05/2020	AD
Ethylbenzene	0.186	0.805	0.100	0.434		EPA-TO-15	02/29/2020	AD
Heptane	0.359	1.44	0.100	0.402		EPA-TO-15	02/29/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	02/29/2020	AD
m,p-Xylene	0.655	2.84	0.200	0.868		EPA-TO-15	02/29/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	03/05/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	03/05/2020	AD
Naphthalene	0.288	1.51	0.0250	0.131		EPA-TO-15	02/29/2020	AD
n-Hexane	0.303	1.07	0.100	0.352		EPA-TO-15	03/05/2020	AD
o-Xylene	0.276	1.20	0.100	0.434		EPA-TO-15	02/29/2020	AD
4-Ethyltoluene	0.108	0.531	0.100	0.492		EPA-TO-15	02/29/2020	AD
Propylene	15.9	27.4	0.100	0.172	E*	EPA-TO-15	02/29/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	02/29/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	03/05/2020	AD
Tetrachloroethene (PCE)	<0.0500	<0.339	0.0500	0.339		EPA-TO-15	03/05/2020	AD
Tetrahydrofuran	0.114	0.335	0.100	0.295		EPA-TO-15	03/05/2020	AD
Toluene	2.24	8.43	0.100	0.377		EPA-TO-15	03/05/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/05/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	03/05/2020	AD
Trichloroethene (TCE)	0.214	1.15	0.0162	0.0872		EPA-TO-15	03/05/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-6
Lab ID: 2002402-007A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Trichlorofluoromethane (CFC-11)	0.217	1.22	0.100	0.562		EPA-TO-15	03/05/2020	AD
Vinyl acetate	0.489	1.72	0.250	0.880		EPA-TO-15	03/05/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	03/05/2020	AD
Surr: 4-Bromofluorobenzene	104 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	AD

NOTES:
* - Flagged value is not within established control limits.
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-5
Lab ID: 2002402-008A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	02/29/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	02/29/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	02/29/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	02/29/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	02/29/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	02/29/2020	AD
1,2,4-Trimethylbenzene	0.180	0.884	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	02/29/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	02/29/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/29/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	02/29/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/29/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	02/29/2020	AD
1,3-Dichlorobenzene	5.50	33.1	0.0750	0.451	E	EPA-TO-15	02/29/2020	AD
1,4-Dichlorobenzene	5.86	35.2	0.0750	0.451	E	EPA-TO-15	02/29/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	02/29/2020	AD
(MEK) 2-Butanone	1.30	3.82	0.250	0.737		EPA-TO-15	02/29/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Isopropyl Alcohol	<0.250	<0.614	0.250	0.614		EPA-TO-15	02/29/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/29/2020	AD
Acetone	8.73	20.7	0.250	0.594	E	EPA-TO-15	02/29/2020	AD
Acrolein	0.317	0.727	0.125	0.287		EPA-TO-15	02/29/2020	AD
Benzene	0.371	1.19	0.0224	0.0715		EPA-TO-15	02/29/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	02/29/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	02/29/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	02/29/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	02/29/2020	AD
Carbon disulfide	0.457	1.42	0.375	1.17		EPA-TO-15	02/29/2020	AD
Carbon tetrachloride	0.0861	0.542	0.0164	0.103		EPA-TO-15	02/29/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-5
Lab ID: 2002402-008A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	02/29/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	02/29/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	02/29/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	02/29/2020	AD
Chloromethane	0.679	1.40	0.125	0.258		EPA-TO-15	02/29/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	02/29/2020	AD
Cyclohexane	0.158	0.542	0.100	0.344		EPA-TO-15	02/29/2020	AD
Dichlorodifluoromethane (CFC-12)	0.558	2.76	0.100	0.495		EPA-TO-15	02/29/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	02/29/2020	AD
Ethyl acetate	1.19	4.28	0.250	0.901		EPA-TO-15	02/29/2020	AD
Ethylbenzene	0.155	0.673	0.100	0.434		EPA-TO-15	02/29/2020	AD
Heptane	0.300	1.20	0.100	0.402		EPA-TO-15	02/29/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	02/29/2020	AD
m,p-Xylene	0.583	2.53	0.200	0.868		EPA-TO-15	02/29/2020	AD
Methyl methacrylate	0.252	1.03	0.100	0.409		EPA-TO-15	02/29/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	02/29/2020	AD
Naphthalene	0.532	2.79	0.0250	0.131		EPA-TO-15	02/29/2020	AD
n-Hexane	0.622	2.19	0.100	0.352		EPA-TO-15	02/29/2020	AD
o-Xylene	0.231	1.00	0.100	0.434		EPA-TO-15	02/29/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	02/29/2020	AD
Propylene	13.9	23.9	0.100	0.172	E*	EPA-TO-15	02/29/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	02/29/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	02/29/2020	AD
Tetrachloroethene (PCE)	0.0544	0.369	0.0500	0.339		EPA-TO-15	02/29/2020	AD
Tetrahydrofuran	0.544	1.60	0.100	0.295		EPA-TO-15	02/29/2020	AD
Toluene	2.30	8.66	0.100	0.377		EPA-TO-15	02/29/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/29/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	02/29/2020	AD
Trichloroethene (TCE)	0.405	2.17	0.0162	0.0872		EPA-TO-15	02/29/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: IA-5
Lab ID: 2002402-008A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Trichlorofluoromethane (CFC-11)	0.276	1.55	0.100	0.562		EPA-TO-15	02/29/2020	AD
Vinyl acetate	0.325	1.14	0.250	0.880		EPA-TO-15	02/29/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	02/29/2020	AD
Surr: 4-Bromofluorobenzene	102 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	AD

NOTES:
* - Flagged value is not within established control limits.
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-5
Lab ID: 2002402-009A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.400	<2.18	0.400	2.18		EPA-TO-15	02/29/2020	WC
1,1,2,2-Tetrachloroethane	<0.300	<2.06	0.300	2.06		EPA-TO-15	02/29/2020	WC
CFC-113	<0.400	<3.07	0.400	3.07		EPA-TO-15	02/29/2020	WC
1,1,2-Trichloroethane (TCA)	<0.500	<2.73	0.500	2.73		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethane	<0.200	<0.810	0.200	0.810		EPA-TO-15	02/29/2020	WC
1,1-Dichloroethene (DCE)	<0.400	<1.59	0.400	1.59		EPA-TO-15	02/29/2020	WC
1,2,4-Trichlorobenzene	<0.300	<2.23	0.300	2.23		EPA-TO-15	02/29/2020	WC
1,2,4-Trimethylbenzene	0.800	3.93	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,2-Dibromoethane (EDB)	<0.200	<1.54	0.200	1.54		EPA-TO-15	02/29/2020	WC
1,2-Dichlorobenzene	<0.400	<2.40	0.400	2.40		EPA-TO-15	02/29/2020	WC
1,2-Dichloroethane	<0.200	<0.809	0.200	0.809		EPA-TO-15	02/29/2020	WC
1,2-Dichloropropane	<0.500	<2.31	0.500	2.31		EPA-TO-15	02/29/2020	WC
1,3,5-Trimethylbenzene	<0.300	<1.47	0.300	1.47		EPA-TO-15	02/29/2020	WC
1,3-Butadiene	<0.500	<1.11	0.500	1.11		EPA-TO-15	02/29/2020	WC
1,3-Dichlorobenzene	0.900	5.41	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dichlorobenzene	3.35	20.1	0.300	1.80		EPA-TO-15	02/29/2020	WC
1,4-Dioxane	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
(MEK) 2-Butanone	<1.00	<2.95	1.00	2.95		EPA-TO-15	02/29/2020	WC
2-Hexanone	<1.00	<4.10	1.00	4.10		EPA-TO-15	02/29/2020	WC
Isopropyl Alcohol	376	924	1.00	2.46	E	EPA-TO-15	02/29/2020	WC
4-Methyl-2-pentanone (MIBK)	<1.00	<4.10	1.00	4.10		EPA-TO-15	02/29/2020	WC
Acetone	31.3	74.3	1.00	2.38	E	EPA-TO-15	02/29/2020	WC
Acrolein	<0.500	<1.15	0.500	1.15		EPA-TO-15	02/29/2020	WC
Benzene	0.530	1.69	0.0895	0.286		EPA-TO-15	02/29/2020	WC
Benzyl chloride	<0.500	<2.59	0.500	2.59		EPA-TO-15	02/29/2020	WC
Dichlorobromomethane	<0.300	<2.01	0.300	2.01		EPA-TO-15	02/29/2020	WC
Bromoform	<0.200	<2.07	0.200	2.07		EPA-TO-15	02/29/2020	WC
Bromomethane	<0.500	<1.94	0.500	1.94		EPA-TO-15	02/29/2020	WC
Carbon disulfide	<1.50	<4.67	1.50	4.67		EPA-TO-15	02/29/2020	WC
Carbon tetrachloride	<0.0657	<0.413	0.0657	0.413		EPA-TO-15	02/29/2020	WC

Client: Hart Crowser, Inc.
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-5
Lab ID: 2002402-009A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.200	<0.921	0.200	0.921		EPA-TO-15	02/29/2020	WC
Dibromochloromethane	<0.500	<4.26	0.500	4.26		EPA-TO-15	02/29/2020	WC
Chloroethane	<0.400	<1.06	0.400	1.06		EPA-TO-15	02/29/2020	WC
Chloroform	<0.200	<0.977	0.200	0.977		EPA-TO-15	02/29/2020	WC
Chloromethane	<0.500	<1.03	0.500	1.03		EPA-TO-15	02/29/2020	WC
cis-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	02/29/2020	WC
cis-1,3-dichloropropene	<0.400	<1.82	0.400	1.82		EPA-TO-15	02/29/2020	WC
Cyclohexane	0.730	2.51	0.400	1.38		EPA-TO-15	02/29/2020	WC
Dichlorodifluoromethane (CFC-12)	0.410	2.03	0.400	1.98		EPA-TO-15	02/29/2020	WC
Dichlorotetrafluoroethane (CFC-114)	<0.400	<2.80	0.400	2.80		EPA-TO-15	02/29/2020	WC
Ethyl acetate	<1.00	<3.60	1.00	3.60		EPA-TO-15	02/29/2020	WC
Ethylbenzene	0.420	1.82	0.400	1.74		EPA-TO-15	02/29/2020	WC
Heptane	0.770	3.09	0.400	1.61		EPA-TO-15	02/29/2020	WC
Hexachlorobutadiene	<1.00	<10.7	1.00	10.7		EPA-TO-15	02/29/2020	WC
m,p-Xylene	1.72	7.47	0.800	3.47		EPA-TO-15	02/29/2020	WC
Methyl methacrylate	<0.400	<1.64	0.400	1.64		EPA-TO-15	02/29/2020	WC
Methylene chloride	<2.00	<6.95	2.00	6.95		EPA-TO-15	02/29/2020	WC
Naphthalene	0.110	0.577	0.100	0.524		EPA-TO-15	02/29/2020	WC
n-Hexane	1.11	3.91	0.400	1.41		EPA-TO-15	02/29/2020	WC
o-Xylene	0.650	2.82	0.400	1.74		EPA-TO-15	02/29/2020	WC
4-Ethyltoluene	<0.400	<1.97	0.400	1.97		EPA-TO-15	02/29/2020	WC
Propylene	11.6	19.9	0.400	0.688		EPA-TO-15	02/29/2020	WC
Styrene	<0.400	<1.70	0.400	1.70		EPA-TO-15	02/29/2020	WC
Methyl tert-butyl ether (MTBE)	<0.400	<1.44	0.400	1.44		EPA-TO-15	02/29/2020	WC
Tetrachloroethene (PCE)	<0.200	<1.36	0.200	1.36		EPA-TO-15	02/29/2020	WC
Tetrahydrofuran	<0.400	<1.18	0.400	1.18		EPA-TO-15	02/29/2020	WC
Toluene	3.58	13.5	0.400	1.51		EPA-TO-15	02/29/2020	WC
trans-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	02/29/2020	WC
trans-1,3-dichloropropene	<0.500	<2.27	0.500	2.27		EPA-TO-15	02/29/2020	WC
Trichloroethene (TCE)	0.360	1.93	0.0649	0.349		EPA-TO-15	02/29/2020	WC

Client: **Hart Crowser, Inc.**
WorkOrder: 2002402
Project: Universal Sheet Metal

Client Sample ID: SV-5
Lab ID: 2002402-009A
Sample Type: Summa Canister

Date Sampled: 2/21/2020
Date Received: 2/22/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	<0.400	<2.25	0.400	2.25		EPA-TO-15	02/29/2020	WC
Vinyl acetate	<1.00	<3.52	1.00	3.52		EPA-TO-15	02/29/2020	WC
Vinyl chloride	<0.107	<0.274	0.107	0.274		EPA-TO-15	02/29/2020	WC
Surr: 4-Bromofluorobenzene	99.2 %Rec	--	70-130	--		EPA-TO-15	02/29/2020	WC

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Helium by GC/TCD

Sample ID: **LCS-R57816** SampType: **LCS** Units: **ppt** Prep Date: **3/5/2020** RunNo: **57816**
Client ID: **LCSW** Batch ID: **R57816** Analysis Date: **3/5/2020** SeqNo: **1154543**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Helium	ND	100	100.0	0	94.9	80	120				

NOTES:
ppt = parts per thousand

Sample ID: **MB-R57816** SampType: **MBLK** Units: **ppt** Prep Date: **3/5/2020** RunNo: **57816**
Client ID: **MBLKW** Batch ID: **R57816** Analysis Date: **3/5/2020** SeqNo: **1154544**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Helium	ND	100									

NOTES:
ppt = parts per thousand

Sample ID: **2002402-003AREP** SampType: **REP** Units: **ppt** Prep Date: **3/5/2020** RunNo: **57816**
Client ID: **SV-6** Batch ID: **R57816** Analysis Date: **3/5/2020** SeqNo: **1154546**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Helium	ND	100						0		30	

NOTES:
ppt = parts per thousand

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2002469-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/1/2020** RunNo: **57713**
Client ID: **BATCH** Batch ID: **R57713** Analysis Date: **3/1/2020** SeqNo: **1152387**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	ND	0.400						0		30	I
Dichlorodifluoromethane (CFC-12)	0.697	0.400						0.6830	2.05	30	I
Chloromethane	0.640	0.500						0.6412	0.211	30	I
Dichlorotetrafluoroethane (CFC-114)	ND	0.400						0		30	I
Vinyl chloride	ND	0.107						0		30	I
1,3-Butadiene	ND	0.500						0		30	I
Bromomethane	ND	0.500						0		30	I
Trichlorofluoromethane (CFC-11)	ND	0.400						0		30	I
Chloroethane	ND	0.400						0		30	I
Acrolein	ND	0.500						0		30	I
1,1-Dichloroethene (DCE)	ND	0.400						0		30	I
Acetone	2.31	1.00						2.420	4.54	30	I
Isopropyl Alcohol	ND	1.00						0		30	I
Methylene chloride	ND	2.00						0		30	I
Carbon disulfide	ND	1.50						0		30	I
trans-1,2-Dichloroethene	ND	0.200						0		30	I
Methyl tert-butyl ether (MTBE)	ND	0.400						0		30	I
n-Hexane	ND	0.400						0		30	I
1,1-Dichloroethane	ND	0.200						0		30	I
Vinyl acetate	ND	1.00						0		30	I
cis-1,2-Dichloroethene	ND	0.200						0		30	I
(MEK) 2-Butanone	ND	1.00						0		30	I
Ethyl acetate	ND	1.00						0		30	I
Chloroform	ND	0.200						0		30	I
Tetrahydrofuran	ND	0.400						0		30	I
1,1,1-Trichloroethane	ND	0.400						0		30	I
Carbon tetrachloride	0.108	0.0657						0.1107	2.51	30	I
1,2-Dichloroethane	ND	0.200						0		30	I
Benzene	0.198	0.0895						0.2106	6.31	30	I
Cyclohexane	ND	0.400						0		30	I
Trichloroethene (TCE)	ND	0.0649						0		30	I

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2002469-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/1/2020** RunNo: **57713**
Client ID: **BATCH** Batch ID: **R57713** Analysis Date: **3/1/2020** SeqNo: **1152387**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	ND	0.500						0		30	I
Methyl methacrylate	ND	0.400						0		30	I
Dichlorobromomethane	ND	0.300						0		30	I
1,4-Dioxane	ND	0.400						0		30	I
cis-1,3-dichloropropene	ND	0.400						0		30	I
Toluene	ND	0.400						0		30	I
trans-1,3-dichloropropene	ND	0.500						0		30	I
1,1,2-Trichloroethane (TCA)	ND	0.500						0		30	I
Tetrachloroethene (PCE)	1.07	0.200						1.126	4.78	30	I
Dibromochloromethane	ND	0.500						0		30	I
1,2-Dibromoethane (EDB)	ND	0.200						0		30	I
Chlorobenzene	ND	0.200						0		30	I
Ethylbenzene	ND	0.400						0		30	I
m,p-Xylene	ND	0.800						0		30	I
o-Xylene	ND	0.400						0		30	I
Styrene	ND	0.400						0		30	I
Bromoform	ND	0.200						0		30	I
1,1,2,2-Tetrachloroethane	ND	0.300						0		30	I
1,3,5-Trimethylbenzene	ND	0.300						0		30	I
1,2,4-Trimethylbenzene	ND	0.300						0		30	I
Benzyl chloride	ND	0.500						0		30	I
4-Ethyltoluene	ND	0.400						0		30	I
1,3-Dichlorobenzene	ND	0.300						0		30	I
1,4-Dichlorobenzene	ND	0.300						0		30	I
1,2-Dichlorobenzene	ND	0.400						0		30	I
1,2,4-Trichlorobenzene	ND	0.300						0		30	I
Hexachlorobutadiene	ND	1.00						0		30	I
Naphthalene	0.897	0.100						0.9636	7.21	30	I
2-Hexanone	ND	1.00						0		30	I
4-Methyl-2-pentanone (MIBK)	ND	1.00						0		30	I
CFC-113	ND	0.400						0		30	I

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2002469-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/1/2020** RunNo: **57713**
Client ID: **BATCH** Batch ID: **R57713** Analysis Date: **3/1/2020** SeqNo: **1152387**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Heptane	ND	0.400						0		30	I
Surr: 4-Bromofluorobenzene	3.75		4.000		93.7	70	130		0		I

NOTES:
I - Indicates an analyte with an internal standard that does not meet established acceptance criteria.

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R57711** SampType: **LCS** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **LCSW** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152260**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	1.91	0.400	2.000	0	95.5	70	130				
Dichlorodifluoromethane (CFC-12)	2.01	0.400	2.000	0	101	70	130				
Chloromethane	2.01	0.500	2.000	0	101	70	130				
Dichlorotetrafluoroethane (CFC-114)	1.98	0.400	2.000	0	99.0	70	130				
Vinyl chloride	1.97	0.107	2.000	0	98.5	70	130				
1,3-Butadiene	1.94	0.500	2.000	0	97.0	70	130				
Bromomethane	2.04	0.500	2.000	0	102	70	130				
Trichlorofluoromethane (CFC-11)	2.10	0.400	2.000	0	105	70	130				
Chloroethane	2.00	0.400	2.000	0	100	70	130				
Acrolein	1.92	0.500	2.000	0	96.0	70	130				
1,1-Dichloroethene (DCE)	1.96	0.400	2.000	0	98.0	70	130				
Acetone	2.02	1.00	2.000	0	101	70	130				
Isopropyl Alcohol	1.98	1.00	2.000	0	99.0	70	130				
Methylene chloride	2.21	2.00	2.000	0	110	70	130				
Carbon disulfide	1.98	1.50	2.000	0	99.0	70	130				
trans-1,2-Dichloroethene	1.99	0.200	2.000	0	99.5	70	130				
Methyl tert-butyl ether (MTBE)	1.92	0.400	2.000	0	96.0	70	130				
n-Hexane	2.02	0.400	2.000	0	101	70	130				
1,1-Dichloroethane	2.03	0.200	2.000	0	102	70	130				
Vinyl acetate	1.84	1.00	2.000	0	92.0	70	130				
cis-1,2-Dichloroethene	2.00	0.200	2.000	0	100	70	130				
(MEK) 2-Butanone	2.06	1.00	2.000	0	103	70	130				
Ethyl acetate	2.03	1.00	2.000	0	102	70	130				
Chloroform	2.00	0.200	2.000	0	100	70	130				
Tetrahydrofuran	1.96	0.400	2.000	0	98.0	70	130				
1,1,1-Trichloroethane	2.01	0.400	2.000	0	101	70	130				
Carbon tetrachloride	2.01	0.0657	2.000	0	101	70	130				
1,2-Dichloroethane	2.01	0.200	2.000	0	101	70	130				
Benzene	2.06	0.0895	2.000	0	103	70	130				
Cyclohexane	1.88	0.400	2.000	0	94.0	70	130				
Trichloroethene (TCE)	1.97	0.0649	2.000	0	98.5	70	130				

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R57711** SampType: **LCS** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **LCSW** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152260**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	1.99	0.500	2.000	0	99.5	70	130				
Methyl methacrylate	1.88	0.400	2.000	0	94.0	70	130				
Dichlorobromomethane	1.97	0.300	2.000	0	98.5	70	130				
1,4-Dioxane	1.95	0.400	2.000	0	97.5	70	130				
cis-1,3-dichloropropene	1.88	0.400	2.000	0	94.0	70	130				
Toluene	1.91	0.400	2.000	0	95.5	70	130				
trans-1,3-dichloropropene	1.94	0.500	2.000	0	97.0	70	130				
1,1,2-Trichloroethane (TCA)	1.98	0.500	2.000	0	99.0	70	130				
Tetrachloroethene (PCE)	1.95	0.200	2.000	0	97.5	70	130				
Dibromochloromethane	1.98	0.500	2.000	0	99.0	70	130				
1,2-Dibromoethane (EDB)	1.96	0.200	2.000	0	98.0	70	130				
Chlorobenzene	2.03	0.200	2.000	0	102	70	130				
Ethylbenzene	1.90	0.400	2.000	0	95.0	70	130				
m,p-Xylene	3.89	0.800	4.000	0	97.2	70	130				
o-Xylene	1.85	0.400	2.000	0	92.5	70	130				
Styrene	1.98	0.400	2.000	0	99.0	70	130				
Bromoform	2.03	0.200	2.000	0	102	70	130				
1,1,2,2-Tetrachloroethane	1.97	0.300	2.000	0	98.5	70	130				
1,3,5-Trimethylbenzene	1.93	0.300	2.000	0	96.5	70	130				
1,2,4-Trimethylbenzene	1.96	0.300	2.000	0	98.0	70	130				
Benzyl chloride	2.03	0.500	2.000	0	102	70	130				
4-Ethyltoluene	1.98	0.400	2.000	0	99.0	70	130				
1,3-Dichlorobenzene	2.04	0.300	2.000	0	102	70	130				
1,4-Dichlorobenzene	2.01	0.300	2.000	0	101	70	130				
1,2-Dichlorobenzene	1.99	0.400	2.000	0	99.5	70	130				
1,2,4-Trichlorobenzene	2.01	0.300	2.000	0	101	70	130				
Hexachlorobutadiene	2.02	1.00	2.000	0	101	70	130				
Naphthalene	1.94	0.100	2.000	0	97.0	70	130				
2-Hexanone	2.02	1.00	2.000	0	101	70	130				
4-Methyl-2-pentanone (MIBK)	1.95	1.00	2.000	0	97.5	70	130				
CFC-113	2.04	0.400	2.000	0	102	70	130				

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R57711** SampType: **LCS** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **LCSW** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152260**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Heptane	1.95	0.400	2.000	0	97.5	70	130				
Surr: 4-Bromofluorobenzene	3.96		4.000		99.0	70	130				

Sample ID: **MB-R57711** SampType: **MBLK** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **MBLKW** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152261**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	ND	0.400									
Dichlorodifluoromethane (CFC-12)	ND	0.400									
Chloromethane	ND	0.500									
Dichlorotetrafluoroethane (CFC-114)	ND	0.400									
Vinyl chloride	ND	0.107									
1,3-Butadiene	ND	0.500									
Bromomethane	ND	0.500									
Trichlorofluoromethane (CFC-11)	ND	0.400									
Chloroethane	ND	0.400									
Acrolein	ND	0.500									
1,1-Dichloroethene (DCE)	ND	0.400									
Acetone	ND	1.00									
Isopropyl Alcohol	ND	1.00									
Methylene chloride	ND	2.00									
Carbon disulfide	ND	1.50									
trans-1,2-Dichloroethene	ND	0.200									
Methyl tert-butyl ether (MTBE)	ND	0.400									
n-Hexane	ND	0.400									
1,1-Dichloroethane	ND	0.200									
Vinyl acetate	ND	1.00									
cis-1,2-Dichloroethene	ND	0.200									
(MEK) 2-Butanone	ND	1.00									
Ethyl acetate	ND	1.00									

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R57711** SampType: **MBLK** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **MBLKW** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152261**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroform	ND	0.200									
Tetrahydrofuran	ND	0.400									
1,1,1-Trichloroethane	ND	0.400									
Carbon tetrachloride	ND	0.0657									
1,2-Dichloroethane	ND	0.200									
Benzene	ND	0.0895									
Cyclohexane	ND	0.400									
Trichloroethene (TCE)	ND	0.0649									
1,2-Dichloropropane	ND	0.500									
Methyl methacrylate	ND	0.400									
Dichlorobromomethane	ND	0.300									
1,4-Dioxane	ND	0.400									
cis-1,3-dichloropropene	ND	0.400									
Toluene	ND	0.400									
trans-1,3-dichloropropene	ND	0.500									
1,1,2-Trichloroethane (TCA)	ND	0.500									
Tetrachloroethene (PCE)	ND	0.200									
Dibromochloromethane	ND	0.500									
1,2-Dibromoethane (EDB)	ND	0.200									
Chlorobenzene	ND	0.200									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	0.800									
o-Xylene	ND	0.400									
Styrene	ND	0.400									
Bromoform	ND	0.200									
1,1,2,2-Tetrachloroethane	ND	0.300									
1,3,5-Trimethylbenzene	ND	0.300									
1,2,4-Trimethylbenzene	ND	0.300									
Benzyl chloride	ND	0.500									
4-Ethyltoluene	ND	0.400									
1,3-Dichlorobenzene	ND	0.300									

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R57711** SampType: **MBLK** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **MBLKW** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152261**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	ND	0.300									
1,2-Dichlorobenzene	ND	0.400									
1,2,4-Trichlorobenzene	ND	0.300									
Hexachlorobutadiene	ND	1.00									
Naphthalene	ND	0.100									
2-Hexanone	ND	1.00									
4-Methyl-2-pentanone (MIBK)	ND	1.00									
CFC-113	ND	0.400									
Heptane	ND	0.400									
Surr: 4-Bromofluorobenzene	3.80		4.000		95.0	70	130				

Sample ID: **2002477-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **BATCH** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152267**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	ND	0.400						4.400	200	30	R
Dichlorodifluoromethane (CFC-12)	192	0.400						181.9	5.16	30	E
Chloromethane	ND	0.500						0		30	
Dichlorotetrafluoroethane (CFC-114)	ND	0.400						0		30	
Vinyl chloride	ND	0.107						0		30	
1,3-Butadiene	ND	0.500						0		30	
Bromomethane	ND	0.500						0		30	
Trichlorofluoromethane (CFC-11)	4.57	0.400						4.450	2.66	30	
Chloroethane	ND	0.400						0		30	
Acrolein	ND	0.500						0		30	
1,1-Dichloroethene (DCE)	ND	0.400						0		30	
Acetone	35.4	1.00						35.17	0.737	30	E
Isopropyl Alcohol	28.4	1.00						89.54	104	30	RE
Methylene chloride	ND	2.00						0		30	
Carbon disulfide	ND	1.50						0		30	

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2002477-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **BATCH** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152267**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,2-Dichloroethene	ND	0.200						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.400						0		30	
n-Hexane	ND	0.400						0		30	
1,1-Dichloroethane	ND	0.200						0		30	
Vinyl acetate	ND	1.00						0		30	
cis-1,2-Dichloroethene	ND	0.200						0		30	
(MEK) 2-Butanone	26.1	1.00						25.77	1.31	30	E
Ethyl acetate	ND	1.00						0		30	
Chloroform	ND	0.200						0		30	
Tetrahydrofuran	32.1	0.400						31.83	0.782	30	E
1,1,1-Trichloroethane	ND	0.400						0		30	
Carbon tetrachloride	ND	0.0657						0		30	
1,2-Dichloroethane	ND	0.200						0		30	
Benzene	0.0900	0.0895						0.1000	10.5	30	
Cyclohexane	ND	0.400						0		30	
Trichloroethene (TCE)	0.740	0.0649						0.7300	1.36	30	
1,2-Dichloropropane	ND	0.500						0		30	
Methyl methacrylate	ND	0.400						0		30	
Dichlorobromomethane	ND	0.300						0		30	
1,4-Dioxane	ND	0.400						0		30	
cis-1,3-dichloropropene	ND	0.400						0		30	
Toluene	ND	0.400						0		30	
trans-1,3-dichloropropene	ND	0.500						0		30	
1,1,2-Trichloroethane (TCA)	ND	0.500						0		30	
Tetrachloroethene (PCE)	42.5	0.200						40.79	4.11	30	E
Dibromochloromethane	ND	0.500						0		30	
1,2-Dibromoethane (EDB)	ND	0.200						0		30	
Chlorobenzene	ND	0.200						0		30	
Ethylbenzene	ND	0.400						0		30	
m,p-Xylene	ND	0.800						0		30	
o-Xylene	ND	0.400						0		30	

Work Order: 2002402
CLIENT: Hart Crowser, Inc.
Project: Universal Sheet Metal

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2002477-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **2/29/2020** RunNo: **57711**
Client ID: **BATCH** Batch ID: **R57711** Analysis Date: **2/29/2020** SeqNo: **1152267**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Styrene	ND	0.400						0		30	
Bromoform	ND	0.200						0		30	
1,1,2,2-Tetrachloroethane	ND	0.300						0		30	
1,3,5-Trimethylbenzene	ND	0.300						0		30	
1,2,4-Trimethylbenzene	ND	0.300						0.3000	6.90	30	
Benzyl chloride	ND	0.500						0		30	
4-Ethyltoluene	ND	0.400						0		30	
1,3-Dichlorobenzene	ND	0.300						0		30	
1,4-Dichlorobenzene	ND	0.300						0		30	
1,2-Dichlorobenzene	ND	0.400						0		30	
1,2,4-Trichlorobenzene	ND	0.300						0		30	
Hexachlorobutadiene	ND	1.00						0		30	
Naphthalene	ND	0.100						0		30	
2-Hexanone	ND	1.00						0		30	
4-Methyl-2-pentanone (MIBK)	ND	1.00						0		30	
CFC-113	ND	0.400						0		30	
Heptane	ND	0.400						0		30	
Surr: 4-Bromofluorobenzene	4.01		4.000		100	70	130		0		

NOTES:
R - High RPD observed. The method is in control as indicated by the LCS.
E - Estimated value. The amount exceeds the linear working range of the instrument.

Sample Log-In Check List

Client Name:	**HART**	Work Order Number:	**2002402**
Logged by:	**Clare Griggs**	Date Received:	**2/22/2020 10:54:00 AM**

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 Required ☑
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

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 2/12/20 Page: 1 of: 2

Laboratory Project No (Internal): 2002402

Special Remarks:

Client: Hart Crowser

Project Name: Universal Sheet metal

Project No: 193601

Address:

Location: Woodinville

City, State, Zip:

Collected by: Andrew Ohkahara

Telephone:

Reports to (PM): Marissa Goodman

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☐ OK to Dispose ☐ Hold (fees may apply)

Fax:

Email (PM): marissa.goodman@hartcrowser.com

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1	UA-2	17642 Canister / FR8-19 Flow Reg	2/10/21 Date / 2118 Time	AA	6L	8 Hr	10mtorr Pressure / 2/18/2020 Date	30+ Pressure / 2/10/21 Date	8 Pressure / 2/10/21 Date		X										-4
2	IA-4	15901 Canister / FR8-16 Flow Reg	2/10/21 Date / 2405 Time	IA	6L	8 Hr	10mtorr Pressure / 2/18/2020 Date	29 Pressure / 2/10/21 Date	6 Pressure / 2/10/21 Date		X										-8
3	SV-6	10863 Canister / FR8-30 Flow Reg	2/10/21 Date / 2015 Time	S	6L	8 Hr	10mtorr Pressure / 2/18/2020 Date	30+ Pressure / 2/10/21 Date	7 Pressure / 2/10/21 Date	X											-12
4	IA-7	13971 Canister / FR8-11 Flow Reg	2/10/21 Date / 2027 Time	IA	6L	8 Hr	10mtorr Pressure / 2/14/2020 Date	30+ Pressure / 2/10/21 Date	6.5 Pressure / 2/10/21 Date		X										-7
5	SV-7	34756 Canister / FR8-23 Flow Reg	2/11/20 Date / 2001 Time	S	6L	8 Hr	10mtorr Pressure / 2/14/2020 Date	30+ Pressure / 2/10/21 Date	7.5 Pressure / 2/10/21 Date	X											-7

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x	4/22/20 1054	x	2/22/20 1054
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-Around Time:

- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: Page: 2 of: 2

Laboratory Project No (Internal): 2002402

Special Remarks:

Client: Hart Crowser

Address:

City, State, Zip:

Telephone:

Fax:

Project Name:

Project No:

Location:

Collected by:

Reports to (PM):

Email (PM):

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☐ OK to Dispose ☐ Hold (fees may apply)

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1	SV-4	34758 Canister / FV-4 Flow Reg	2/20/21 Date / 21058 Time	S	6L	8 Hr	10mtorr Pressure / 2/14/2020 Date	3.0 Pressure / 2/20/21 Date	10 Pressure / 2/20/21 Date	X											-6
2	IA-6	32813 Canister / FR8-28 Flow Reg	2/20/21 Date / 21031 Time	IA	6L	8 Hr	10mtorr Pressure / 2/14/2020 Date	30 Pressure / 2/20/21 Date	8 Pressure / 2/20/21 Date		X										-6
3	IA-5	13986 Canister / FR8-2601 Flow Reg	2/20/21 Date / 21037 Time	IA	6L	8 Hr	10mtorr Pressure / 2/14/2020 Date	30 Pressure / 2/20/21 Date	12.5 Pressure / 2/20/21 Date		X										-7
4	SV-5	34757 Canister / FR8-33 Flow Reg	2/20/21 Date / 21038 Time	S	6L	8 Hr	10mtorr Pressure / 2/14/2020 Date	2.0 Pressure / 2/20/21 Date	5.5 Pressure / 2/20/21 Date	X											-8
5		15897 Canister / Flow Reg	Date / Time		6L	8 Hr	10mtorr Pressure / 2/14/2020 Date	Pressure / Date	Pressure / Date												-30

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	2/22/20 1054	x [signature]	2/22/20 1054
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-Around Time:

- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 2/20/21/20 Page: 1 of: 2

Laboratory Project No (Internal): 2002402

Project Name: Universal Sheet metal

Special Remarks:

Project No: 193650 1

Location: Woodinville

Collected by: Andrew Ohkahara

Edits by CRT 2/27 per M.G

Client: Hart Crowser

Address:

City, State, Zip:

Telephone:

Fax:

Reports to (PM): Marissa Goodman

Email (PM): marissa.goodman@hartcrowser.com

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☐ OK to Dispose ☐ Hold (fees may apply)

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure ("Hg)	Field Final Sample Pressure ("Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1	UA-2	17642 Canister FR8-19 Flow Reg	Date Time	AA	6L	8 Hr	10mtorr Pressure 2/18/2020 Date	30 Pressure Date	8 Pressure 2/20/21 Date		X						X				-4
2	IA-4	15901 Canister FR8-16 Flow Reg	Date Time	IA	6L	8 Hr	10mtorr Pressure 2/18/2020 Date	29 Pressure Date	6 Pressure Date		X						X				-8
3	SV-6	10863 Canister FR8-30 Flow Reg	Date Time	S	6L	8 Hr	10mtorr Pressure 2/18/2020 Date	30 Pressure Date	7 Pressure Date	X							X				-12
4	IA-7	13971 Canister FR8-11 Flow Reg	Date Time	IA	6L	8 Hr	10mtorr Pressure 2/14/2020 Date	30 Pressure Date	6.5 Pressure Date		X										-7
5	SV-7	34756 Canister FR8-23 Flow Reg	Date Time	S	6L	8 Hr	10mtorr Pressure 2/14/2020 Date	30 Pressure Date	7.5 Pressure Date	X							X				-7

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x	2/22/20 1054	x	2/22/20 1054
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-Around Time:

- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: Page: 2 of: 2

Laboratory Project No (Internal): 2002402

Special Remarks:

Edits by CRT 2/27 per M.G.

Project Name:

Project No:

Location:

Collected by:

Reports to (PM):

Email (PM):

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☐ OK to Dispose ☐ Hold (fees may apply)

Client: Hart Crowser

Address:

City, State, Zip:

Telephone:

Fax:

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure (" Hg)
1	SV-4	34758 / FV-4	2/20/21 21058	S	6L	8 Hr	10mtorr / 2/14/2020	30	10	X							X				-6
2	IA-6	32813 / FR8-28	2/20/21 21031	IA	6L	8 Hr	10mtorr / 2/14/2020	30	8		X										-6
3	IA-5	13986 / FR8-101	2/20/21 21057	IA	6L	8 Hr	10mtorr / 2/14/2020	30	12.5		X										-7
4	SV-5	34757 / FR8-33	2/20/21 21038	S	6L	8 Hr	10mtorr / 2/14/2020	7.0	5.5	X							X				-8
5		15897			6L	8 Hr	10mtorr / 2/14/2020														-30

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished: x [signature] Date/Time: 2/22/20 1054

Relinquished: x Date/Time:

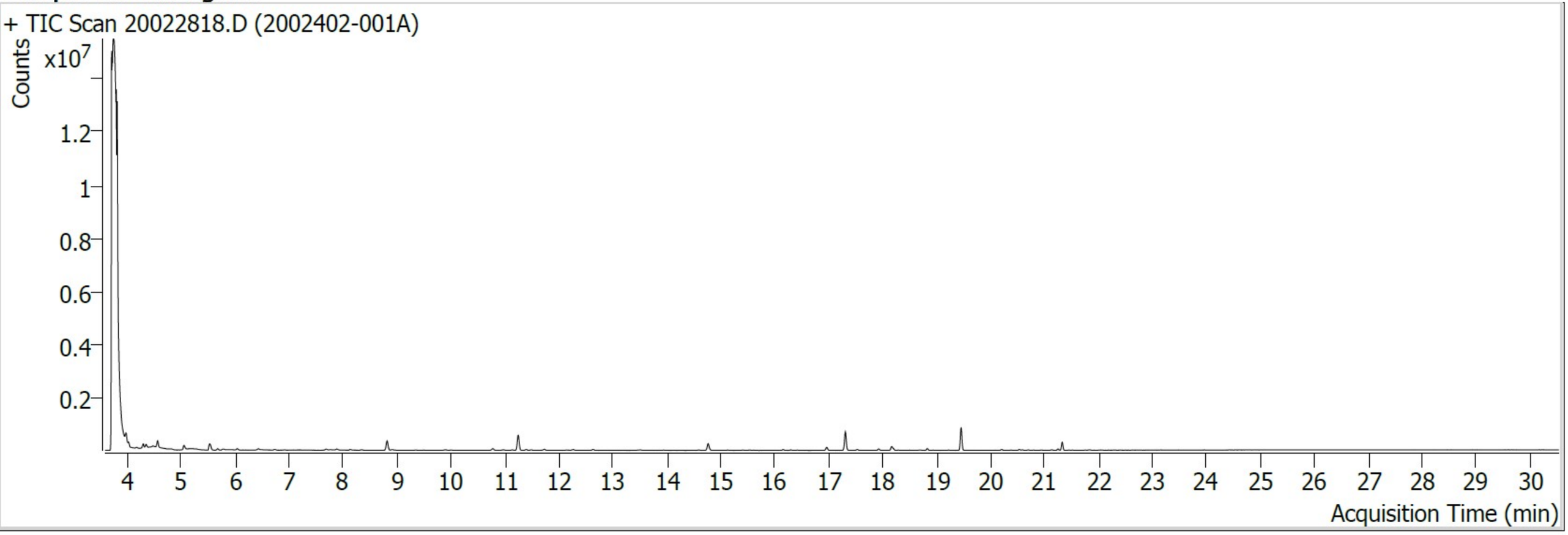
Received: x [signature] Date/Time: 2/22/20 1054

Received: x Date/Time:

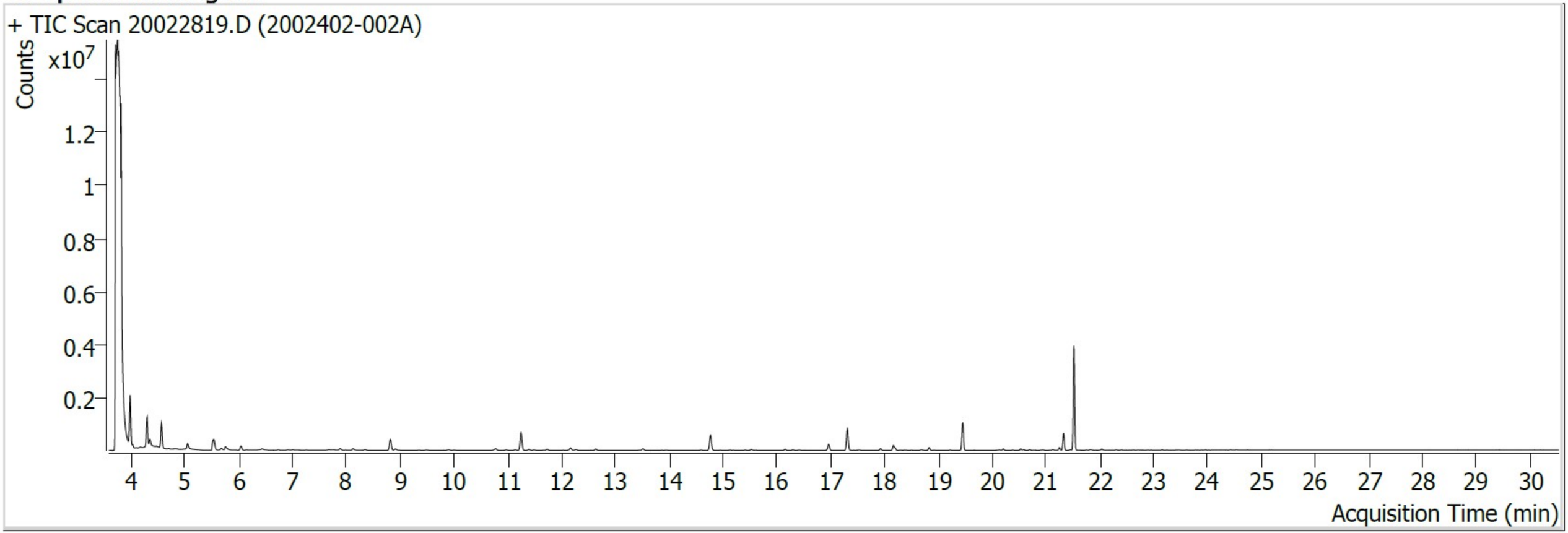
Turn-Around Time:
- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day ____ (specify)

2002402 –
VOC CHROMATOGRAMS

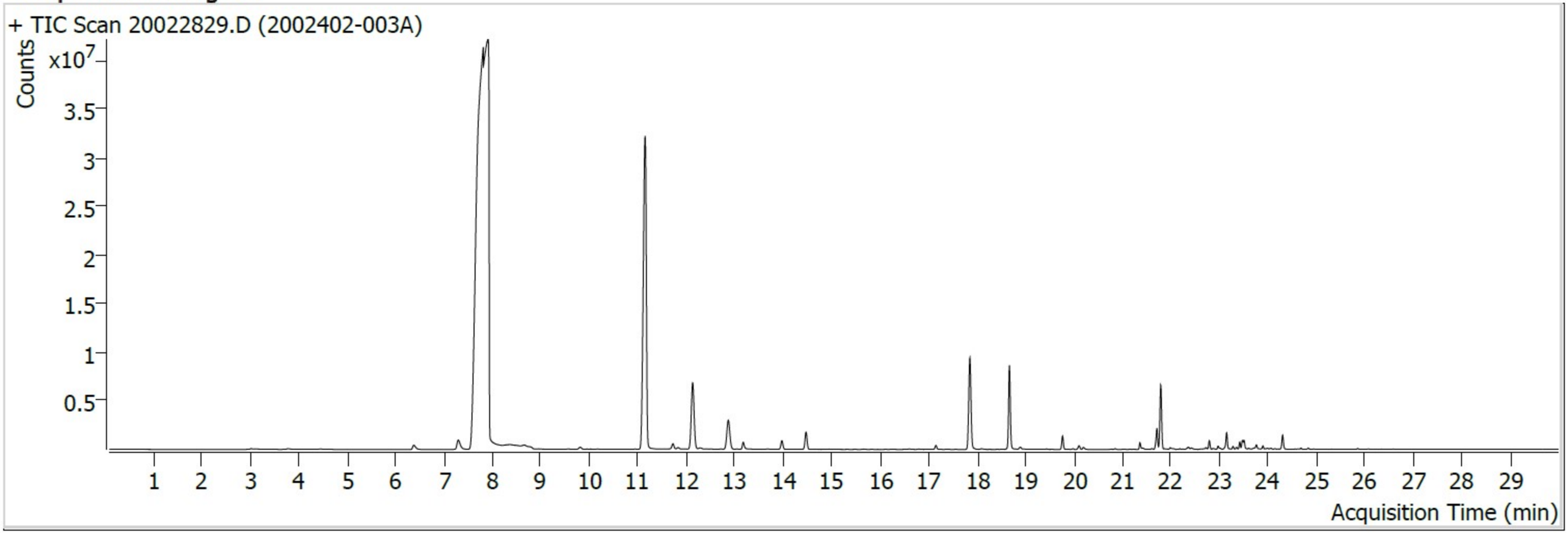
Sample Chromatogram



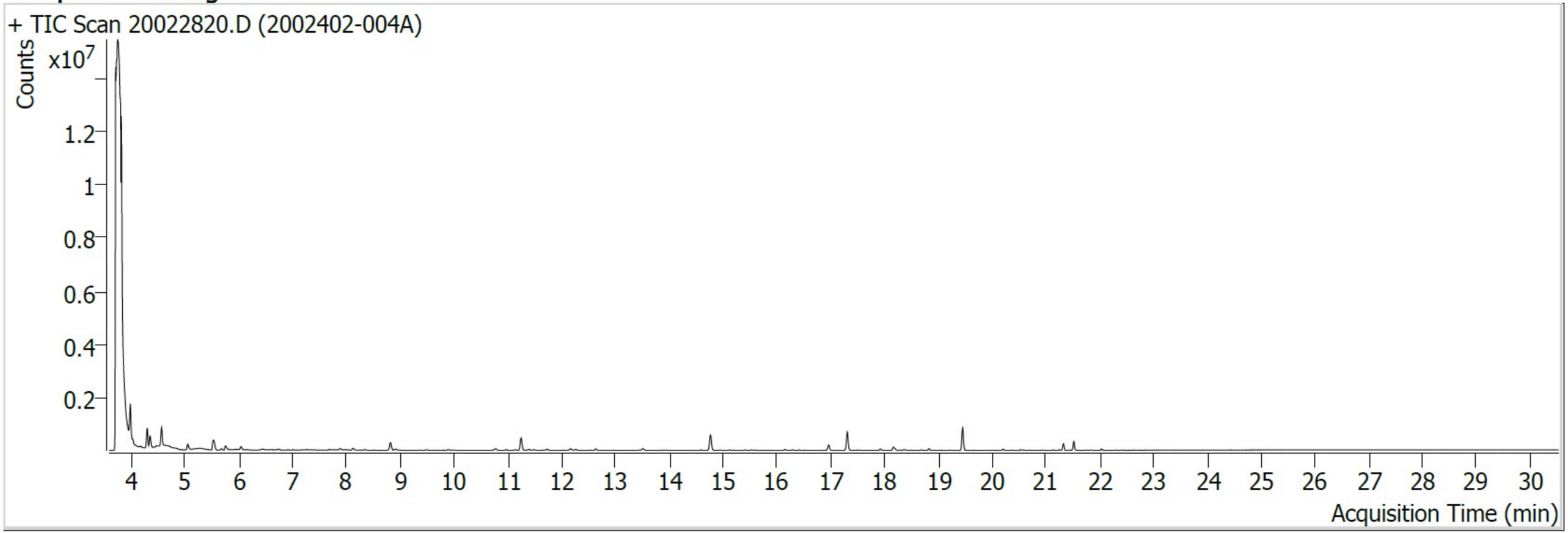
Sample Chromatogram



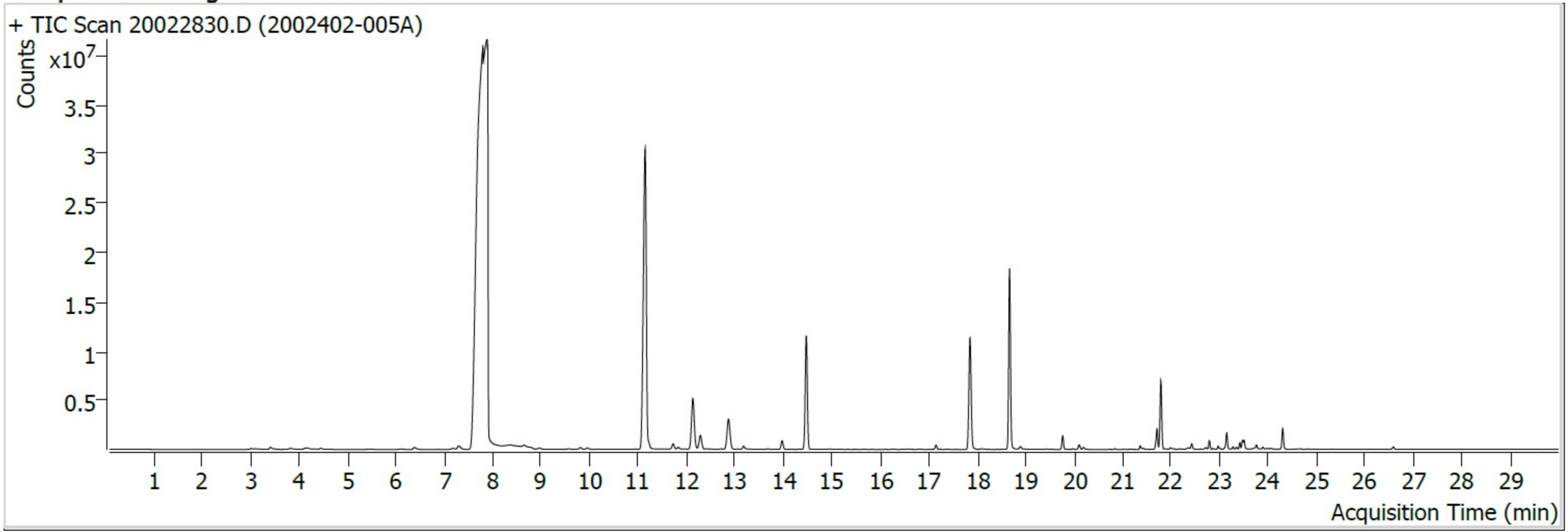
Sample Chromatogram



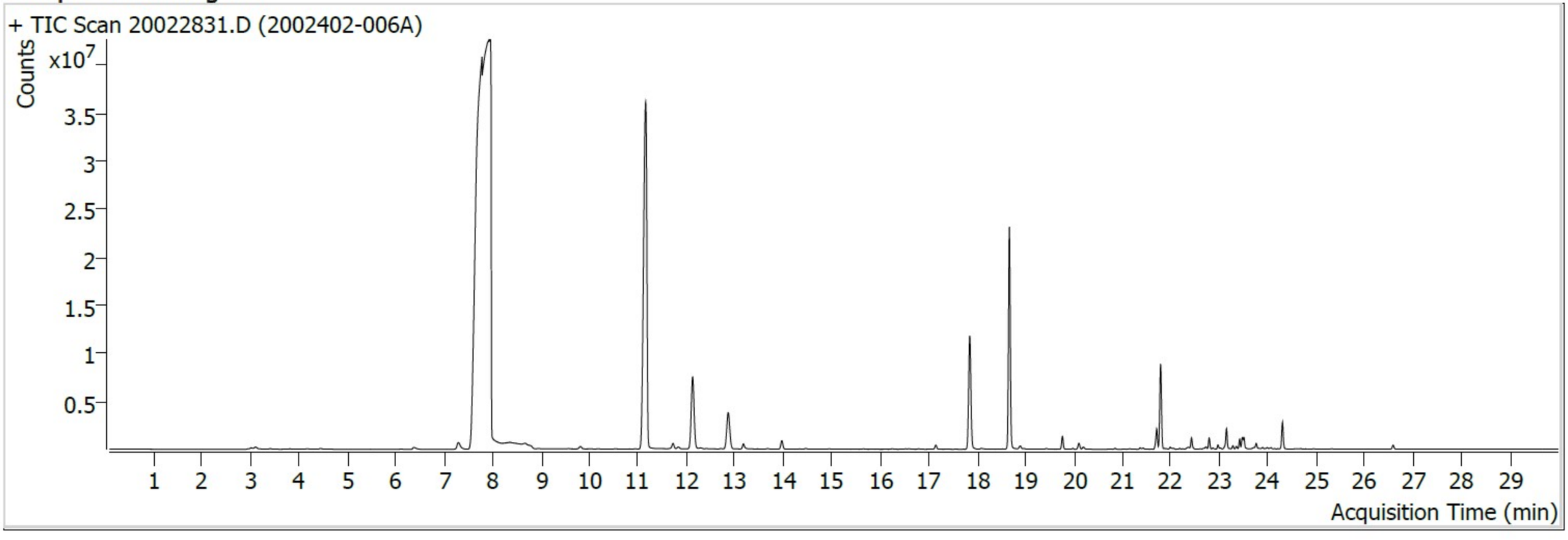
Sample Chromatogram



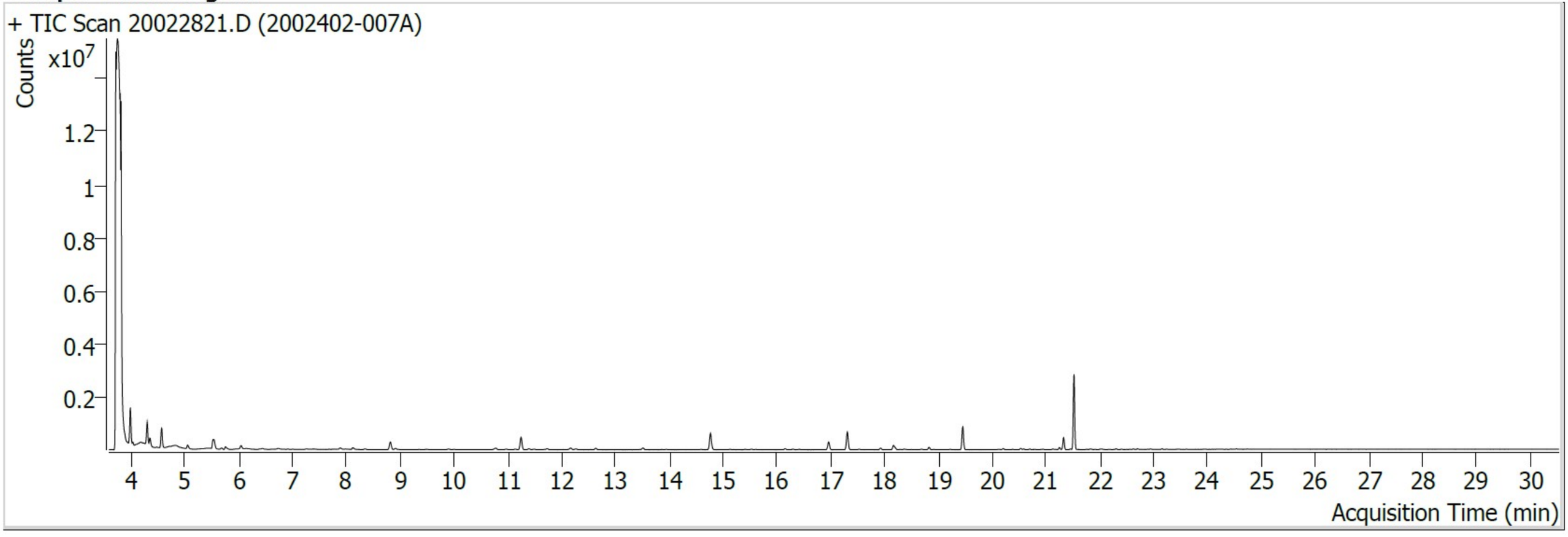
Sample Chromatogram



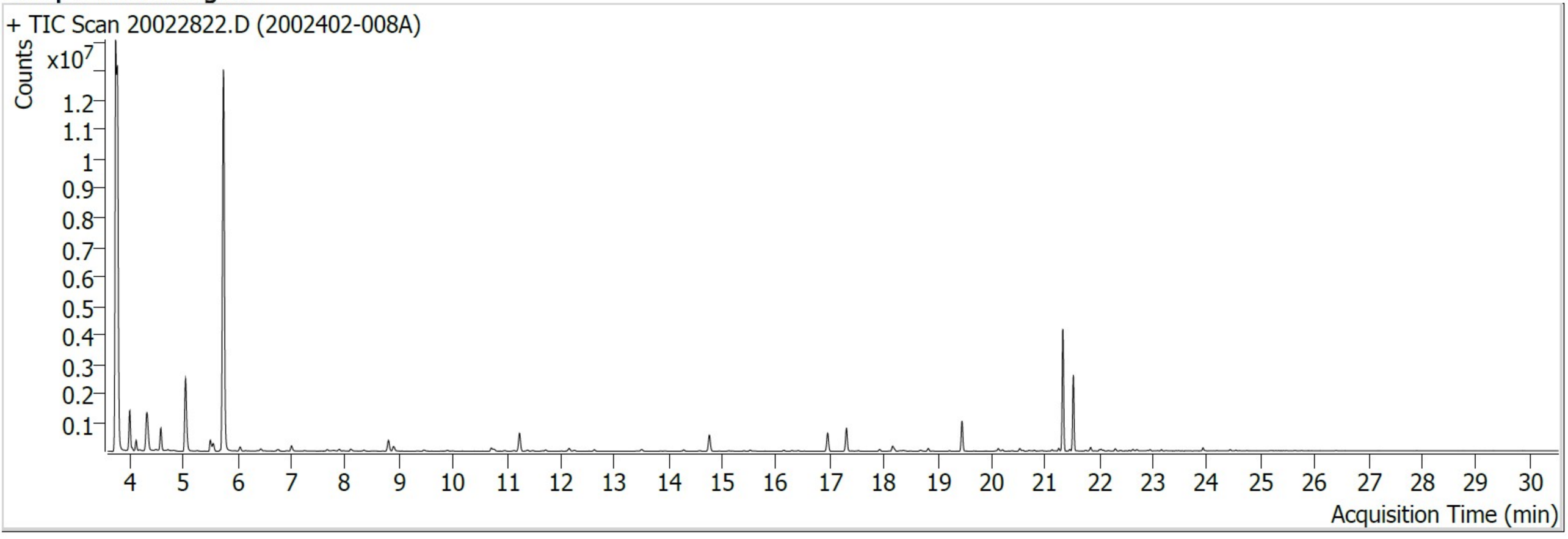
Sample Chromatogram



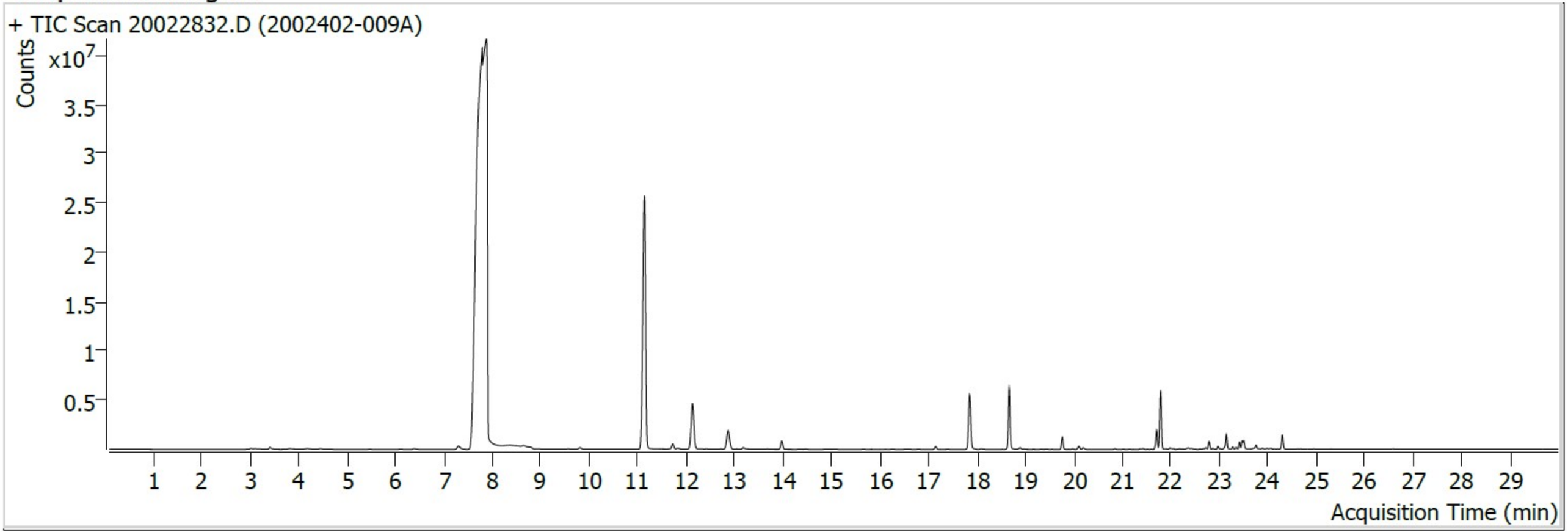
Sample Chromatogram

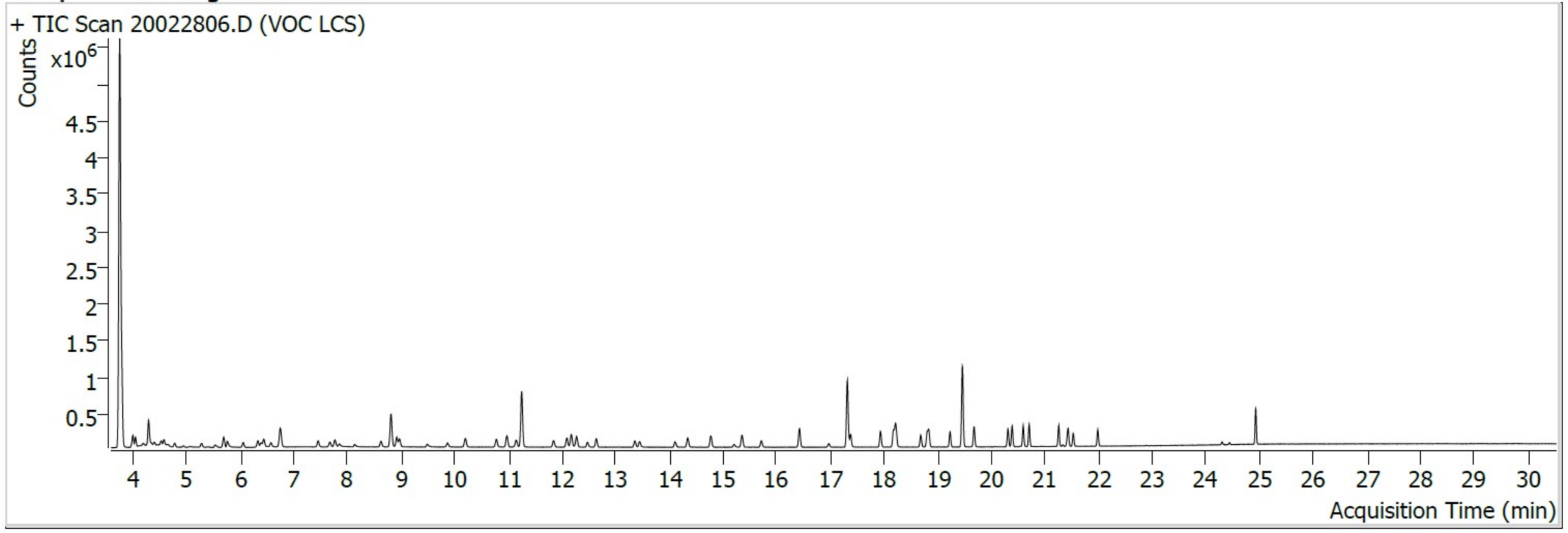


Sample Chromatogram

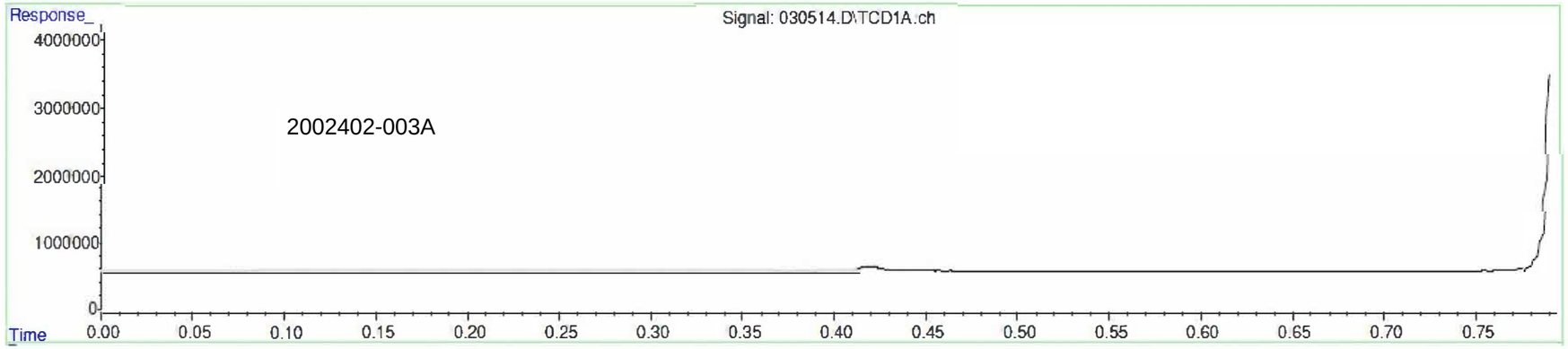


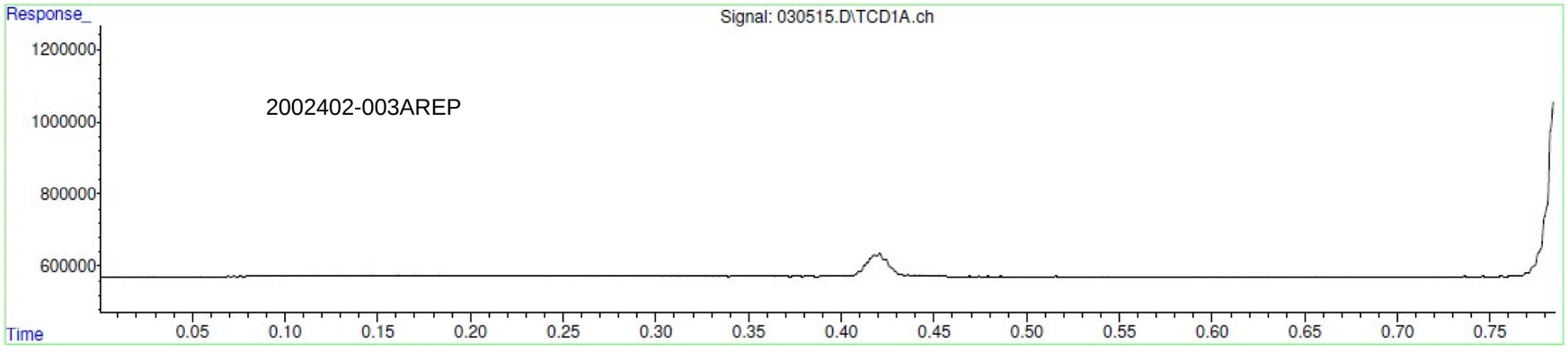
Sample Chromatogram




+ TIC Scan 20022806.D (VOC LCS)
Counts
x10^6
4.5
4
3.5
3
2.5
2
1.5
1
0.5
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Acquisition Time (min)

2002402 –
HELIUM CHROMATOGRAMS


Response_
Signal: 030514.D\TCD1A.ch
4000000
3000000
2000000
1000000
0
2002402-003A
Time
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75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2002402-003AREP
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1000000
800000
600000
Time
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
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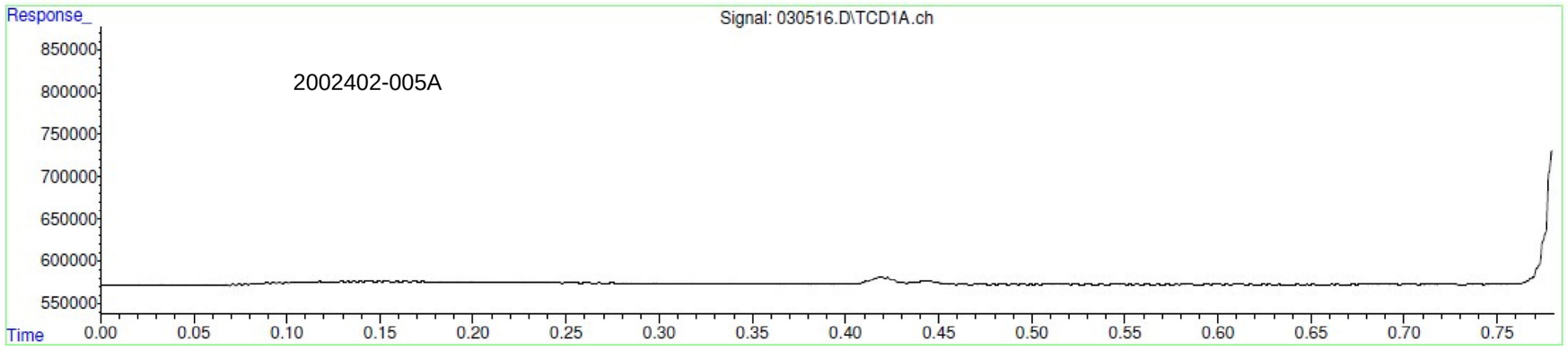
0.65
0.70
0.75


Response_
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2002402-005A
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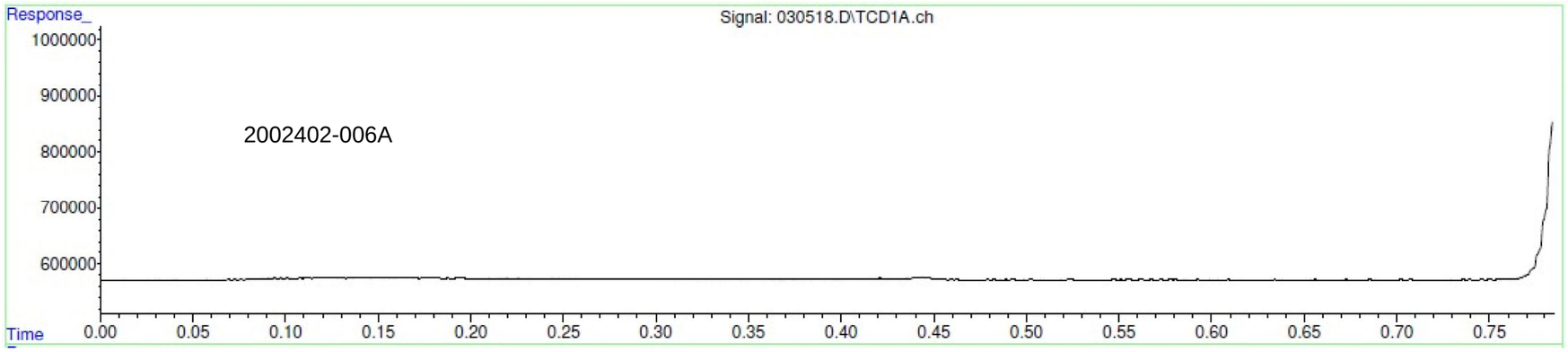
800000
750000
700000
650000
600000
550000
Time
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75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800000
700000
600000
2002402-006A
Time
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0.10
0.15
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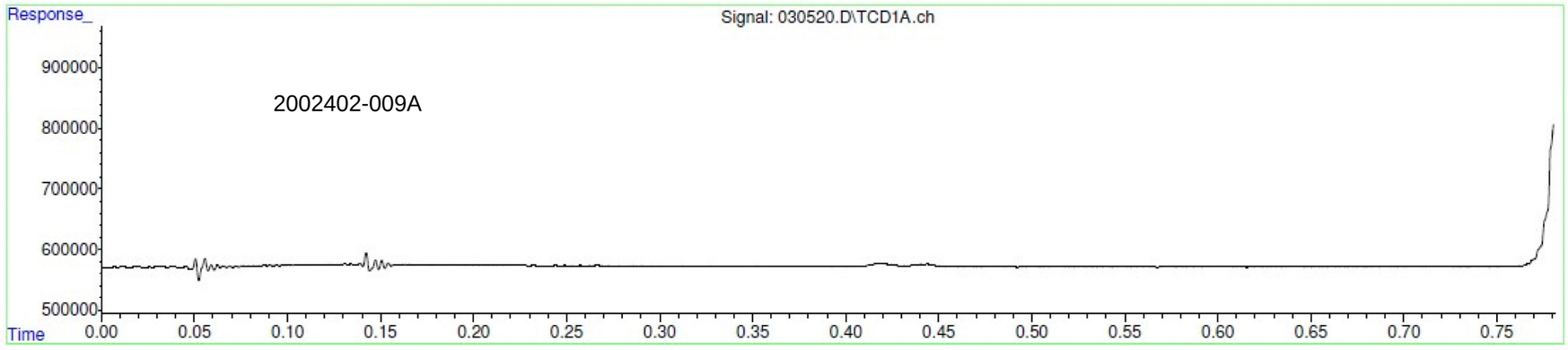
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75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2002402-009A
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600000
500000
Time
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0.05
0.10
0.15
0.20
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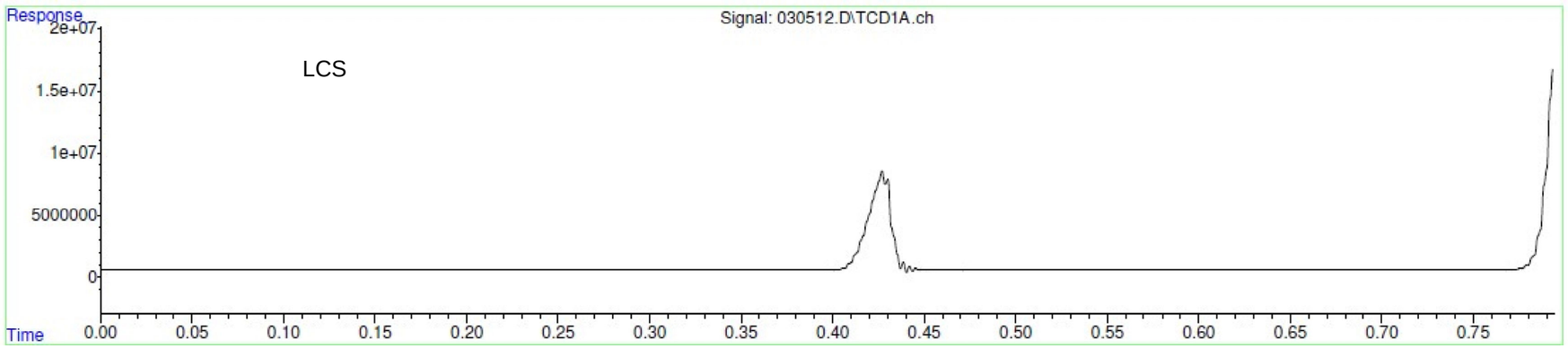
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75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1e+07
5000000
0
Time
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75

LCS

REPORT 2003205 – UNIVERSAL MANUFACTURING

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

Hart Crowser, Inc.
Marissa Goodman
3131 Elliott Avenue, Suite 600
Seattle, WA 98121

RE: UMC
Work Order Number: 2003205

March 20, 2020

Attention Marissa Goodman:

Fremont Analytical, Inc. received 7 sample(s) on 3/12/2020 for the analyses presented in the following report.

Helium by GC/TCD
Volatile Organic Compounds by EPA Method TO-15

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: *03/20/2020*

CLIENT: Hart Crowser, Inc.
Project: UMC
Work Order: 2003205

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2003205-001	UA-1	03/11/2020 7:42 PM	03/12/2020 1:00 PM
2003205-002	SV-1	03/11/2020 8:00 PM	03/12/2020 1:00 PM
2003205-003	SV-2	03/11/2020 7:10 PM	03/12/2020 1:00 PM
2003205-004	IA-3	03/11/2020 6:48 PM	03/12/2020 1:00 PM
2003205-005	IA-2	03/11/2020 7:09 PM	03/12/2020 1:00 PM
2003205-006	SV-3	03/11/2020 6:49 PM	03/12/2020 1:00 PM
2003205-007	IA-1	03/11/2020 7:27 PM	03/12/2020 1:00 PM

Case Narrative

WO#: **2003205**
Date: **3/20/2020**

CLIENT: Hart Crowser, Inc.
Project: UMC

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 (<20%RSD, <20% Drift or minimum RRF)
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
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Hart Crowser, Inc.
Project: UMC

Lab ID: 2003205-002 **Collection Date:** 3/11/2020 8:00:00 PM
Client Sample ID: **SV-1** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R58177		Analyst: AD
Helium	ND	157	D	ppt ‰	1.57	3/20/2020 3:34:00 PM

NOTES:
PPT = Parts per Thousand

Lab ID: 2003205-003 **Collection Date:** 3/11/2020 7:10:00 PM
Client Sample ID: **SV-2** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R58177		Analyst: AD
Helium	ND	158	D	ppt ‰	1.58	3/20/2020 3:42:00 PM

NOTES:
PPT = Parts per Thousand

Lab ID: 2003205-006 **Collection Date:** 3/11/2020 6:49:00 PM
Client Sample ID: **SV-3** **Matrix:** Air

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Helium by GC/TCD				Batch ID: R58177		Analyst: AD
Helium	ND	143	D	ppt ‰	1.43	3/20/2020 3:49:00 PM

NOTES:
PPT = Parts per Thousand

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: UA-1
Lab ID: 2003205-001A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	03/13/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	03/13/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	03/13/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	03/20/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	03/13/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	03/13/2020	AD
1,2,4-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	03/20/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	03/13/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	03/20/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	03/13/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	03/20/2020	AD
(MEK) 2-Butanone	0.250	0.739	0.250	0.737		EPA-TO-15	03/13/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	03/13/2020	AD
Isopropyl Alcohol	0.281	0.691	0.250	0.614		EPA-TO-15	03/13/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	03/13/2020	AD
Acetone	1.66	3.95	0.250	0.594	*	EPA-TO-15	03/13/2020	AD
Acrolein	0.205	0.470	0.125	0.287		EPA-TO-15	03/13/2020	AD
Benzene	0.157	0.503	0.0224	0.0715		EPA-TO-15	03/13/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	03/13/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	03/20/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	03/13/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	03/13/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	03/13/2020	AD
Carbon tetrachloride	0.0928	0.584	0.0164	0.103		EPA-TO-15	03/13/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: UA-1
Lab ID: 2003205-001A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	03/20/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	03/20/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	03/13/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	03/13/2020	AD
Chloromethane	0.748	1.55	0.125	0.258		EPA-TO-15	03/13/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	03/20/2020	AD
Cyclohexane	<0.100	<0.344	0.100	0.344		EPA-TO-15	03/20/2020	AD
Dichlorodifluoromethane (CFC-12)	0.562	2.78	0.100	0.495		EPA-TO-15	03/13/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	03/13/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	03/13/2020	AD
Ethylbenzene	<0.100	<0.434	0.100	0.434		EPA-TO-15	03/13/2020	AD
Heptane	<0.100	<0.402	0.100	0.402		EPA-TO-15	03/13/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	03/13/2020	AD
m,p-Xylene	<0.200	<0.868	0.200	0.868		EPA-TO-15	03/13/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	03/20/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	03/13/2020	AD
Naphthalene	0.0454	0.238	0.0250	0.131	*	EPA-TO-15	03/13/2020	AD
n-Hexane	<0.100	<0.352	0.100	0.352		EPA-TO-15	03/13/2020	AD
o-Xylene	<0.100	<0.434	0.100	0.434		EPA-TO-15	03/13/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	03/13/2020	AD
Propylene	0.838	1.44	0.100	0.172	B*	EPA-TO-15	03/13/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	03/13/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	03/13/2020	AD
Tetrachloroethene (PCE)	0.0956	0.649	0.0500	0.339		EPA-TO-15	03/20/2020	AD
Tetrahydrofuran	<0.100	<0.295	0.100	0.295		EPA-TO-15	03/13/2020	AD
Toluene	0.363	1.37	0.100	0.377		EPA-TO-15	03/20/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	03/20/2020	AD
Trichloroethene (TCE)	<0.0162	<0.0872	0.0162	0.0872		EPA-TO-15	03/20/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: UA-1
Lab ID: 2003205-001A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	0.277	1.56	0.100	0.562		EPA-TO-15	03/13/2020	AD
Vinyl acetate	<0.250	<0.880	0.250	0.880		EPA-TO-15	03/13/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	03/13/2020	AD
Surr: 4-Bromofluorobenzene	81.6 %Rec	--	70-130	--		EPA-TO-15	03/13/2020	AD

NOTES:
* - Flagged value is not within established control limits.

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-1
Lab ID: 2003205-002A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	0.955	5.21	0.400	2.18		EPA-TO-15	03/15/2020	IH
1,1,2,2-Tetrachloroethane	<3.00	<20.6	3.00	20.6		EPA-TO-15	03/16/2020	IH
CFC-113	<4.00	<30.7	4.00	30.7		EPA-TO-15	03/16/2020	IH
1,1,2-Trichloroethane (TCA)	<5.00	<27.3	5.00	27.3		EPA-TO-15	03/16/2020	IH
1,1-Dichloroethane	0.846	3.43	0.200	0.810		EPA-TO-15	03/15/2020	IH
1,1-Dichloroethene (DCE)	1.13	4.47	0.400	1.59		EPA-TO-15	03/15/2020	IH
1,2,4-Trichlorobenzene	<3.00	<22.3	3.00	22.3		EPA-TO-15	03/16/2020	IH
1,2,4-Trimethylbenzene	<3.00	<14.7	3.00	14.7		EPA-TO-15	03/16/2020	IH
1,2-Dibromoethane (EDB)	<2.00	<15.4	2.00	15.4		EPA-TO-15	03/16/2020	IH
1,2-Dichlorobenzene	<4.00	<24.0	4.00	24.0		EPA-TO-15	03/16/2020	IH
1,2-Dichloroethane	<0.200	<0.809	0.200	0.809		EPA-TO-15	03/15/2020	IH
1,2-Dichloropropane	<5.00	<23.1	5.00	23.1		EPA-TO-15	03/16/2020	IH
1,3,5-Trimethylbenzene	<3.00	<14.7	3.00	14.7		EPA-TO-15	03/16/2020	IH
1,3-Butadiene	2.22	4.92	0.500	1.11		EPA-TO-15	03/15/2020	IH
1,3-Dichlorobenzene	<3.00	<18.0	3.00	18.0		EPA-TO-15	03/16/2020	IH
1,4-Dichlorobenzene	<3.00	<18.0	3.00	18.0		EPA-TO-15	03/16/2020	IH
1,4-Dioxane	<4.00	<14.4	4.00	14.4		EPA-TO-15	03/16/2020	IH
(MEK) 2-Butanone	6.75	19.9	1.00	2.95		EPA-TO-15	03/15/2020	IH
2-Hexanone	<10.0	<41.0	10.0	41.0		EPA-TO-15	03/16/2020	IH
Isopropyl Alcohol	1,870	4,600	10.0	24.6	E	EPA-TO-15	03/16/2020	IH
4-Methyl-2-pentanone (MIBK)	<10.0	<41.0	10.0	41.0		EPA-TO-15	03/16/2020	IH
Acetone	33.8	80.4	10.0	23.8		EPA-TO-15	03/16/2020	IH
Acrolein	1.29	2.96	0.500	1.15		EPA-TO-15	03/15/2020	IH
Benzene	1.82	5.81	0.0895	0.286		EPA-TO-15	03/15/2020	IH
Benzyl chloride	<5.00	<25.9	5.00	25.9		EPA-TO-15	03/16/2020	IH
Dichlorobromomethane	<3.00	<20.1	3.00	20.1		EPA-TO-15	03/16/2020	IH
Bromoform	<2.00	<20.7	2.00	20.7		EPA-TO-15	03/16/2020	IH
Bromomethane	<0.500	<1.94	0.500	1.94		EPA-TO-15	03/15/2020	IH
Carbon disulfide	<1.50	<4.67	1.50	4.67		EPA-TO-15	03/15/2020	IH
Carbon tetrachloride	<0.0657	<0.413	0.0657	0.413		EPA-TO-15	03/15/2020	IH

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-1
Lab ID: 2003205-002A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<2.00	<9.21	2.00	9.21		EPA-TO-15	03/16/2020	IH
Dibromochloromethane	<5.00	<42.6	5.00	42.6		EPA-TO-15	03/16/2020	IH
Chloroethane	<0.400	<1.06	0.400	1.06		EPA-TO-15	03/15/2020	IH
Chloroform	<0.200	<0.977	0.200	0.977		EPA-TO-15	03/15/2020	IH
Chloromethane	<0.500	<1.03	0.500	1.03		EPA-TO-15	03/15/2020	IH
cis-1,2-Dichloroethene	16.4	65.0	0.200	0.793		EPA-TO-15	03/15/2020	IH
cis-1,3-dichloropropene	<4.00	<18.2	4.00	18.2		EPA-TO-15	03/16/2020	IH
Cyclohexane	<4.00	<13.8	4.00	13.8		EPA-TO-15	03/16/2020	IH
Dichlorodifluoromethane (CFC-12)	<0.400	<1.98	0.400	1.98		EPA-TO-15	03/15/2020	IH
Dichlorotetrafluoroethane (CFC-114)	<0.400	<2.80	0.400	2.80		EPA-TO-15	03/15/2020	IH
Ethyl acetate	<1.00	<3.60	1.00	3.60		EPA-TO-15	03/15/2020	IH
Ethylbenzene	<4.00	<17.4	4.00	17.4		EPA-TO-15	03/16/2020	IH
Heptane	<4.00	<16.1	4.00	16.1		EPA-TO-15	03/16/2020	IH
Hexachlorobutadiene	<10.0	<107	10.0	107		EPA-TO-15	03/16/2020	IH
m,p-Xylene	<8.00	<34.7	8.00	34.7		EPA-TO-15	03/16/2020	IH
Methyl methacrylate	<4.00	<16.4	4.00	16.4		EPA-TO-15	03/16/2020	IH
Methylene chloride	<2.00	<6.95	2.00	6.95		EPA-TO-15	03/15/2020	IH
Naphthalene	<1.00	<5.24	1.00	5.24		EPA-TO-15	03/16/2020	IH
n-Hexane	3.45	12.2	0.400	1.41		EPA-TO-15	03/15/2020	IH
o-Xylene	<4.00	<17.4	4.00	17.4		EPA-TO-15	03/16/2020	IH
4-Ethyltoluene	<4.00	<19.7	4.00	19.7		EPA-TO-15	03/16/2020	IH
Propylene	42.1	72.5	4.00	6.88		EPA-TO-15	03/16/2020	IH
Styrene	<4.00	<17.0	4.00	17.0		EPA-TO-15	03/16/2020	IH
Methyl tert-butyl ether (MTBE)	<0.400	<1.44	0.400	1.44		EPA-TO-15	03/15/2020	IH
Tetrachloroethene (PCE)	37.8	256	2.00	13.6		EPA-TO-15	03/16/2020	IH
Tetrahydrofuran	4.04	11.9	0.400	1.18		EPA-TO-15	03/15/2020	IH
Toluene	4.82	18.2	4.00	15.1		EPA-TO-15	03/16/2020	IH
trans-1,2-Dichloroethene	2.61	10.4	0.200	0.793		EPA-TO-15	03/15/2020	IH
trans-1,3-dichloropropene	<5.00	<22.7	5.00	22.7		EPA-TO-15	03/16/2020	IH
Trichloroethene (TCE)	26.4	142	0.649	3.49		EPA-TO-15	03/16/2020	IH

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-1
Lab ID: 2003205-002A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	<0.400	<2.25	0.400	2.25		EPA-TO-15	03/15/2020	IH
Vinyl acetate	<1.00	<3.52	1.00	3.52		EPA-TO-15	03/15/2020	IH
Vinyl chloride	3.00	7.66	0.107	0.274		EPA-TO-15	03/15/2020	IH
Surr: 4-Bromofluorobenzene	93.6 %Rec	--	70-130	--		EPA-TO-15	03/16/2020	IH

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-2
Lab ID: 2003205-003A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	4.15	22.6	4.00	21.8		EPA-TO-15	03/16/2020	IH
1,1,2,2-Tetrachloroethane	<3.00	<20.6	3.00	20.6		EPA-TO-15	03/16/2020	IH
CFC-113	<4.00	<30.7	4.00	30.7		EPA-TO-15	03/16/2020	IH
1,1,2-Trichloroethane (TCA)	<5.00	<27.3	5.00	27.3		EPA-TO-15	03/16/2020	IH
1,1-Dichloroethane	5.23	21.2	2.00	8.10		EPA-TO-15	03/16/2020	IH
1,1-Dichloroethene (DCE)	20.3	80.4	4.00	15.9		EPA-TO-15	03/16/2020	IH
1,2,4-Trichlorobenzene	<3.00	<22.3	3.00	22.3		EPA-TO-15	03/16/2020	IH
1,2,4-Trimethylbenzene	<3.00	<14.7	3.00	14.7		EPA-TO-15	03/16/2020	IH
1,2-Dibromoethane (EDB)	<2.00	<15.4	2.00	15.4		EPA-TO-15	03/16/2020	IH
1,2-Dichlorobenzene	<4.00	<24.0	4.00	24.0		EPA-TO-15	03/16/2020	IH
1,2-Dichloroethane	<2.00	<8.09	2.00	8.09		EPA-TO-15	03/16/2020	IH
1,2-Dichloropropane	<5.00	<23.1	5.00	23.1		EPA-TO-15	03/16/2020	IH
1,3,5-Trimethylbenzene	<3.00	<14.7	3.00	14.7		EPA-TO-15	03/16/2020	IH
1,3-Butadiene	<5.00	<11.1	5.00	11.1		EPA-TO-15	03/16/2020	IH
1,3-Dichlorobenzene	4.23	25.4	3.00	18.0		EPA-TO-15	03/16/2020	IH
1,4-Dichlorobenzene	<3.00	<18.0	3.00	18.0		EPA-TO-15	03/16/2020	IH
1,4-Dioxane	<4.00	<14.4	4.00	14.4		EPA-TO-15	03/16/2020	IH
(MEK) 2-Butanone	58.6	173	10.0	29.5		EPA-TO-15	03/16/2020	IH
2-Hexanone	<10.0	<41.0	10.0	41.0		EPA-TO-15	03/16/2020	IH
Isopropyl Alcohol	2,350	5,790	10.0	24.6	E	EPA-TO-15	03/16/2020	IH
4-Methyl-2-pentanone (MIBK)	<10.0	<41.0	10.0	41.0		EPA-TO-15	03/16/2020	IH
Acetone	252	598	10.0	23.8	E	EPA-TO-15	03/16/2020	IH
Acrolein	<5.00	<11.5	5.00	11.5		EPA-TO-15	03/16/2020	IH
Benzene	1.79	5.73	0.895	2.86		EPA-TO-15	03/16/2020	IH
Benzyl chloride	<5.00	<25.9	5.00	25.9		EPA-TO-15	03/16/2020	IH
Dichlorobromomethane	<3.00	<20.1	3.00	20.1		EPA-TO-15	03/16/2020	IH
Bromoform	<2.00	<20.7	2.00	20.7		EPA-TO-15	03/16/2020	IH
Bromomethane	<5.00	<19.4	5.00	19.4		EPA-TO-15	03/16/2020	IH
Carbon disulfide	<15.0	<46.7	15.0	46.7		EPA-TO-15	03/16/2020	IH
Carbon tetrachloride	<0.657	<4.13	0.657	4.13		EPA-TO-15	03/16/2020	IH

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-2
Lab ID: 2003205-003A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<2.00	<9.21	2.00	9.21		EPA-TO-15	03/16/2020	IH
Dibromochloromethane	<5.00	<42.6	5.00	42.6		EPA-TO-15	03/16/2020	IH
Chloroethane	<4.00	<10.6	4.00	10.6		EPA-TO-15	03/16/2020	IH
Chloroform	152	740	2.00	9.77		EPA-TO-15	03/16/2020	IH
Chloromethane	<5.00	<10.3	5.00	10.3		EPA-TO-15	03/16/2020	IH
cis-1,2-Dichloroethene	498	1,970	2.00	7.93	E	EPA-TO-15	03/16/2020	IH
cis-1,3-dichloropropene	<4.00	<18.2	4.00	18.2		EPA-TO-15	03/16/2020	IH
Cyclohexane	<4.00	<13.8	4.00	13.8		EPA-TO-15	03/16/2020	IH
Dichlorodifluoromethane (CFC-12)	<4.00	<19.8	4.00	19.8		EPA-TO-15	03/16/2020	IH
Dichlorotetrafluoroethane (CFC-114)	<4.00	<28.0	4.00	28.0		EPA-TO-15	03/16/2020	IH
Ethyl acetate	<10.0	<36.0	10.0	36.0		EPA-TO-15	03/16/2020	IH
Ethylbenzene	<4.00	<17.4	4.00	17.4		EPA-TO-15	03/16/2020	IH
Heptane	<4.00	<16.1	4.00	16.1		EPA-TO-15	03/16/2020	IH
Hexachlorobutadiene	<10.0	<107	10.0	107		EPA-TO-15	03/16/2020	IH
m,p-Xylene	<8.00	<34.7	8.00	34.7		EPA-TO-15	03/16/2020	IH
Methyl methacrylate	<4.00	<16.4	4.00	16.4		EPA-TO-15	03/16/2020	IH
Methylene chloride	<20.0	<69.5	20.0	69.5		EPA-TO-15	03/16/2020	IH
Naphthalene	<1.00	<5.24	1.00	5.24		EPA-TO-15	03/16/2020	IH
n-Hexane	38.4	135	4.00	14.1		EPA-TO-15	03/16/2020	IH
o-Xylene	<4.00	<17.4	4.00	17.4		EPA-TO-15	03/16/2020	IH
4-Ethyltoluene	<4.00	<19.7	4.00	19.7		EPA-TO-15	03/16/2020	IH
Propylene	201	346	4.00	6.88	E	EPA-TO-15	03/16/2020	IH
Styrene	<4.00	<17.0	4.00	17.0		EPA-TO-15	03/16/2020	IH
Methyl tert-butyl ether (MTBE)	<4.00	<14.4	4.00	14.4		EPA-TO-15	03/16/2020	IH
Tetrachloroethene (PCE)	9.39	63.7	2.00	13.6		EPA-TO-15	03/16/2020	IH
Tetrahydrofuran	<4.00	<11.8	4.00	11.8		EPA-TO-15	03/16/2020	IH
Toluene	9.95	37.5	4.00	15.1		EPA-TO-15	03/16/2020	IH
trans-1,2-Dichloroethene	98.6	391	2.00	7.93		EPA-TO-15	03/16/2020	IH
trans-1,3-dichloropropene	<5.00	<22.7	5.00	22.7		EPA-TO-15	03/16/2020	IH
Trichloroethene (TCE)	450	2,420	0.649	3.49	E	EPA-TO-15	03/16/2020	IH

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-2
Lab ID: 2003205-003A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	<4.00	<22.5	4.00	22.5		EPA-TO-15	03/16/2020	IH
Vinyl acetate	<10.0	<35.2	10.0	35.2		EPA-TO-15	03/16/2020	IH
Vinyl chloride	23.4	59.7	1.07	2.74		EPA-TO-15	03/16/2020	IH
Surr: 4-Bromofluorobenzene	93.1 %Rec	--	70-130	--		EPA-TO-15	03/16/2020	IH

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-3
Lab ID: 2003205-004A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	03/13/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	03/13/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	03/13/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	03/13/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	03/13/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	03/13/2020	AD
1,2,4-Trimethylbenzene	0.172	0.847	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	03/13/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	03/13/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	03/13/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	03/13/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dichlorobenzene	1.44	8.68	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	03/13/2020	AD
(MEK) 2-Butanone	0.630	1.86	0.250	0.737		EPA-TO-15	03/13/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	03/13/2020	AD
Isopropyl Alcohol	0.622	1.53	0.250	0.614		EPA-TO-15	03/13/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	03/13/2020	AD
Acetone	2.78	6.61	0.250	0.594	*	EPA-TO-15	03/13/2020	AD
Acrolein	0.255	0.585	0.125	0.287		EPA-TO-15	03/13/2020	AD
Benzene	0.300	0.958	0.0224	0.0715		EPA-TO-15	03/13/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	03/13/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	03/13/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	03/13/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	03/13/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	03/13/2020	AD
Carbon tetrachloride	0.0934	0.588	0.0164	0.103		EPA-TO-15	03/13/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-3
Lab ID: 2003205-004A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	03/13/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	03/13/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	03/13/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	03/13/2020	AD
Chloromethane	0.699	1.44	0.125	0.258		EPA-TO-15	03/13/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	03/13/2020	AD
Cyclohexane	0.128	0.442	0.100	0.344		EPA-TO-15	03/13/2020	AD
Dichlorodifluoromethane (CFC-12)	0.525	2.60	0.100	0.495		EPA-TO-15	03/13/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	03/13/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	03/13/2020	AD
Ethylbenzene	0.133	0.575	0.100	0.434		EPA-TO-15	03/13/2020	AD
Heptane	0.175	0.702	0.100	0.402		EPA-TO-15	03/13/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	03/13/2020	AD
m,p-Xylene	0.436	1.89	0.200	0.868		EPA-TO-15	03/13/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	03/13/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	03/13/2020	AD
Naphthalene	0.193	1.01	0.0250	0.131	*	EPA-TO-15	03/13/2020	AD
n-Hexane	0.333	1.17	0.100	0.352		EPA-TO-15	03/13/2020	AD
o-Xylene	0.166	0.719	0.100	0.434		EPA-TO-15	03/13/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	03/13/2020	AD
Propylene	0.688	1.18	0.100	0.172	B*	EPA-TO-15	03/13/2020	AD
Styrene	0.290	1.23	0.100	0.426		EPA-TO-15	03/13/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	03/13/2020	AD
Tetrachloroethene (PCE)	<0.0500	<0.339	0.0500	0.339		EPA-TO-15	03/13/2020	AD
Tetrahydrofuran	<0.100	<0.295	0.100	0.295		EPA-TO-15	03/13/2020	AD
Toluene	0.994	3.74	0.100	0.377		EPA-TO-15	03/13/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	03/13/2020	AD
Trichloroethene (TCE)	0.0264	0.142	0.0162	0.0872		EPA-TO-15	03/13/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-3
Lab ID: 2003205-004A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	0.272	1.53	0.100	0.562		EPA-TO-15	03/13/2020	AD
Vinyl acetate	0.660	2.33	0.250	0.880		EPA-TO-15	03/13/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	03/13/2020	AD
Surr: 4-Bromofluorobenzene	92.7 %Rec	--	70-130	--		EPA-TO-15	03/13/2020	AD

NOTES:
* - Flagged value is not within established control limits.

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-2
Lab ID: 2003205-005A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	03/13/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	03/13/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	03/13/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	03/13/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	03/13/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	03/13/2020	AD
1,2,4-Trimethylbenzene	0.239	1.17	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	03/13/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	03/13/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	03/13/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	03/13/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dichlorobenzene	3.41	20.5	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	03/13/2020	AD
(MEK) 2-Butanone	0.757	2.23	0.250	0.737		EPA-TO-15	03/13/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	03/13/2020	AD
Isopropyl Alcohol	1.82	4.46	0.250	0.614		EPA-TO-15	03/13/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	03/13/2020	AD
Acetone	3.59	8.54	0.250	0.594	*	EPA-TO-15	03/13/2020	AD
Acrolein	0.279	0.639	0.125	0.287		EPA-TO-15	03/13/2020	AD
Benzene	0.325	1.04	0.0224	0.0715		EPA-TO-15	03/13/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	03/13/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	03/13/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	03/13/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	03/13/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	03/13/2020	AD
Carbon tetrachloride	0.0919	0.578	0.0164	0.103		EPA-TO-15	03/13/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-2
Lab ID: 2003205-005A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	03/13/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	03/13/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	03/13/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	03/13/2020	AD
Chloromethane	0.706	1.46	0.125	0.258		EPA-TO-15	03/13/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	03/13/2020	AD
Cyclohexane	0.129	0.444	0.100	0.344		EPA-TO-15	03/13/2020	AD
Dichlorodifluoromethane (CFC-12)	0.543	2.69	0.100	0.495		EPA-TO-15	03/13/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	03/13/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	03/13/2020	AD
Ethylbenzene	0.143	0.619	0.100	0.434		EPA-TO-15	03/13/2020	AD
Heptane	0.189	0.757	0.100	0.402		EPA-TO-15	03/13/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	03/13/2020	AD
m,p-Xylene	0.481	2.09	0.200	0.868		EPA-TO-15	03/13/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	03/13/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	03/13/2020	AD
Naphthalene	0.272	1.43	0.0250	0.131	*	EPA-TO-15	03/13/2020	AD
n-Hexane	0.287	1.01	0.100	0.352		EPA-TO-15	03/13/2020	AD
o-Xylene	0.192	0.834	0.100	0.434		EPA-TO-15	03/13/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	03/13/2020	AD
Propylene	0.742	1.28	0.100	0.172	B*	EPA-TO-15	03/13/2020	AD
Styrene	0.349	1.49	0.100	0.426		EPA-TO-15	03/13/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	03/13/2020	AD
Tetrachloroethene (PCE)	<0.0500	<0.339	0.0500	0.339		EPA-TO-15	03/13/2020	AD
Tetrahydrofuran	<0.100	<0.295	0.100	0.295		EPA-TO-15	03/13/2020	AD
Toluene	1.23	4.64	0.100	0.377		EPA-TO-15	03/13/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	03/13/2020	AD
Trichloroethene (TCE)	0.0732	0.393	0.0162	0.0872		EPA-TO-15	03/13/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-2
Lab ID: 2003205-005A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	0.282	1.58	0.100	0.562		EPA-TO-15	03/13/2020	AD
Vinyl acetate	0.711	2.50	0.250	0.880		EPA-TO-15	03/13/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	03/13/2020	AD
Surr: 4-Bromofluorobenzene	98.5 %Rec	--	70-130	--		EPA-TO-15	03/13/2020	AD

NOTES:
* - Flagged value is not within established control limits.

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-3
Lab ID: 2003205-006A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	16.3	88.9	4.00	21.8		EPA-TO-15	03/16/2020	IH
1,1,2,2-Tetrachloroethane	<3.00	<20.6	3.00	20.6		EPA-TO-15	03/16/2020	IH
CFC-113	<4.00	<30.7	4.00	30.7		EPA-TO-15	03/16/2020	IH
1,1,2-Trichloroethane (TCA)	<5.00	<27.3	5.00	27.3		EPA-TO-15	03/16/2020	IH
1,1-Dichloroethane	4.77	19.3	2.00	8.10		EPA-TO-15	03/16/2020	IH
1,1-Dichloroethene (DCE)	4.73	18.7	4.00	15.9		EPA-TO-15	03/16/2020	IH
1,2,4-Trichlorobenzene	<3.00	<22.3	3.00	22.3		EPA-TO-15	03/16/2020	IH
1,2,4-Trimethylbenzene	<3.00	<14.7	3.00	14.7		EPA-TO-15	03/16/2020	IH
1,2-Dibromoethane (EDB)	<2.00	<15.4	2.00	15.4		EPA-TO-15	03/16/2020	IH
1,2-Dichlorobenzene	<4.00	<24.0	4.00	24.0		EPA-TO-15	03/16/2020	IH
1,2-Dichloroethane	<2.00	<8.09	2.00	8.09		EPA-TO-15	03/16/2020	IH
1,2-Dichloropropane	<5.00	<23.1	5.00	23.1		EPA-TO-15	03/16/2020	IH
1,3,5-Trimethylbenzene	<3.00	<14.7	3.00	14.7		EPA-TO-15	03/16/2020	IH
1,3-Butadiene	<5.00	<11.1	5.00	11.1		EPA-TO-15	03/16/2020	IH
1,3-Dichlorobenzene	4.21	25.3	3.00	18.0		EPA-TO-15	03/16/2020	IH
1,4-Dichlorobenzene	<3.00	<18.0	3.00	18.0		EPA-TO-15	03/16/2020	IH
1,4-Dioxane	<4.00	<14.4	4.00	14.4		EPA-TO-15	03/16/2020	IH
(MEK) 2-Butanone	19.5	57.6	10.0	29.5		EPA-TO-15	03/16/2020	IH
2-Hexanone	<10.0	<41.0	10.0	41.0		EPA-TO-15	03/16/2020	IH
Isopropyl Alcohol	2,700	6,640	10.0	24.6	E	EPA-TO-15	03/16/2020	IH
4-Methyl-2-pentanone (MIBK)	<10.0	<41.0	10.0	41.0		EPA-TO-15	03/16/2020	IH
Acetone	170	404	10.0	23.8		EPA-TO-15	03/16/2020	IH
Acrolein	<5.00	<11.5	5.00	11.5		EPA-TO-15	03/16/2020	IH
Benzene	1.81	5.79	0.895	2.86		EPA-TO-15	03/16/2020	IH
Benzyl chloride	<5.00	<25.9	5.00	25.9		EPA-TO-15	03/16/2020	IH
Dichlorobromomethane	<3.00	<20.1	3.00	20.1		EPA-TO-15	03/16/2020	IH
Bromoform	<2.00	<20.7	2.00	20.7		EPA-TO-15	03/16/2020	IH
Bromomethane	<5.00	<19.4	5.00	19.4		EPA-TO-15	03/16/2020	IH
Carbon disulfide	<15.0	<46.7	15.0	46.7		EPA-TO-15	03/16/2020	IH
Carbon tetrachloride	<0.657	<4.13	0.657	4.13		EPA-TO-15	03/16/2020	IH

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-3
Lab ID: 2003205-006A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<2.00	<9.21	2.00	9.21		EPA-TO-15	03/16/2020	IH
Dibromochloromethane	<5.00	<42.6	5.00	42.6		EPA-TO-15	03/16/2020	IH
Chloroethane	<4.00	<10.6	4.00	10.6		EPA-TO-15	03/16/2020	IH
Chloroform	31.0	152	2.00	9.77		EPA-TO-15	03/16/2020	IH
Chloromethane	<5.00	<10.3	5.00	10.3		EPA-TO-15	03/16/2020	IH
cis-1,2-Dichloroethene	157	622	2.00	7.93		EPA-TO-15	03/16/2020	IH
cis-1,3-dichloropropene	<4.00	<18.2	4.00	18.2		EPA-TO-15	03/16/2020	IH
Cyclohexane	<4.00	<13.8	4.00	13.8		EPA-TO-15	03/16/2020	IH
Dichlorodifluoromethane (CFC-12)	<4.00	<19.8	4.00	19.8		EPA-TO-15	03/16/2020	IH
Dichlorotetrafluoroethane (CFC-114)	<4.00	<28.0	4.00	28.0		EPA-TO-15	03/16/2020	IH
Ethyl acetate	<10.0	<36.0	10.0	36.0		EPA-TO-15	03/16/2020	IH
Ethylbenzene	<4.00	<17.4	4.00	17.4		EPA-TO-15	03/16/2020	IH
Heptane	<4.00	<16.1	4.00	16.1		EPA-TO-15	03/16/2020	IH
Hexachlorobutadiene	<10.0	<107	10.0	107		EPA-TO-15	03/16/2020	IH
m,p-Xylene	<8.00	<34.7	8.00	34.7		EPA-TO-15	03/16/2020	IH
Methyl methacrylate	<4.00	<16.4	4.00	16.4		EPA-TO-15	03/16/2020	IH
Methylene chloride	<20.0	<69.5	20.0	69.5		EPA-TO-15	03/16/2020	IH
Naphthalene	<1.00	<5.24	1.00	5.24		EPA-TO-15	03/16/2020	IH
n-Hexane	8.43	29.7	4.00	14.1		EPA-TO-15	03/16/2020	IH
o-Xylene	<4.00	<17.4	4.00	17.4		EPA-TO-15	03/16/2020	IH
4-Ethyltoluene	<4.00	<19.7	4.00	19.7		EPA-TO-15	03/16/2020	IH
Propylene	120	206	4.00	6.88		EPA-TO-15	03/16/2020	IH
Styrene	<4.00	<17.0	4.00	17.0		EPA-TO-15	03/16/2020	IH
Methyl tert-butyl ether (MTBE)	<4.00	<14.4	4.00	14.4		EPA-TO-15	03/16/2020	IH
Tetrachloroethene (PCE)	<2.00	<13.6	2.00	13.6		EPA-TO-15	03/16/2020	IH
Tetrahydrofuran	<4.00	<11.8	4.00	11.8		EPA-TO-15	03/16/2020	IH
Toluene	9.27	34.9	4.00	15.1		EPA-TO-15	03/16/2020	IH
trans-1,2-Dichloroethene	20.0	79.2	2.00	7.93		EPA-TO-15	03/16/2020	IH
trans-1,3-dichloropropene	<5.00	<22.7	5.00	22.7		EPA-TO-15	03/16/2020	IH
Trichloroethene (TCE)	124	665	0.649	3.49		EPA-TO-15	03/16/2020	IH

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: SV-3
Lab ID: 2003205-006A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	<4.00	<22.5	4.00	22.5		EPA-TO-15	03/16/2020	IH
Vinyl acetate	<10.0	<35.2	10.0	35.2		EPA-TO-15	03/16/2020	IH
Vinyl chloride	7.50	19.2	1.07	2.74		EPA-TO-15	03/16/2020	IH
Surr: 4-Bromofluorobenzene	94.4 %Rec	--	70-130	--		EPA-TO-15	03/16/2020	IH

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-1
Lab ID: 2003205-007A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	03/13/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	03/13/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	03/13/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	03/13/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	03/13/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	03/13/2020	AD
1,2,4-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	03/13/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	03/13/2020	AD
1,2-Dichloroethane	0.203	0.823	0.0500	0.202		EPA-TO-15	03/13/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	03/13/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	03/13/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	03/13/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dichlorobenzene	0.295	1.78	0.0750	0.451		EPA-TO-15	03/13/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	03/13/2020	AD
(MEK) 2-Butanone	0.999	2.95	0.250	0.737		EPA-TO-15	03/13/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	03/13/2020	AD
Isopropyl Alcohol	15.7	38.5	0.250	0.614	E	EPA-TO-15	03/13/2020	AD
4-Methyl-2-pentanone (MIBK)	0.887	3.63	0.250	1.02		EPA-TO-15	03/13/2020	AD
Acetone	4.78	11.4	0.250	0.594	*	EPA-TO-15	03/13/2020	AD
Acrolein	0.812	1.86	0.125	0.287		EPA-TO-15	03/13/2020	AD
Benzene	0.231	0.739	0.0224	0.0715		EPA-TO-15	03/13/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	03/13/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	03/13/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	03/13/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	03/13/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	03/13/2020	AD
Carbon tetrachloride	0.0952	0.599	0.0164	0.103		EPA-TO-15	03/13/2020	AD

Client: Hart Crowser, Inc.
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-1
Lab ID: 2003205-007A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	03/13/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	03/13/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	03/13/2020	AD
Chloroform	<0.0500	<0.244	0.0500	0.244		EPA-TO-15	03/13/2020	AD
Chloromethane	0.717	1.48	0.125	0.258		EPA-TO-15	03/13/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	03/13/2020	AD
Cyclohexane	0.222	0.766	0.100	0.344		EPA-TO-15	03/13/2020	AD
Dichlorodifluoromethane (CFC-12)	0.509	2.52	0.100	0.495		EPA-TO-15	03/13/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	03/13/2020	AD
Ethyl acetate	0.697	2.51	0.250	0.901		EPA-TO-15	03/13/2020	AD
Ethylbenzene	0.106	0.459	0.100	0.434		EPA-TO-15	03/13/2020	AD
Heptane	2.07	8.32	0.100	0.402		EPA-TO-15	03/13/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	03/13/2020	AD
m,p-Xylene	0.271	1.18	0.200	0.868		EPA-TO-15	03/13/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	03/13/2020	AD
Methylene chloride	0.655	2.28	0.500	1.74		EPA-TO-15	03/13/2020	AD
Naphthalene	0.110	0.575	0.0250	0.131	*	EPA-TO-15	03/13/2020	AD
n-Hexane	0.251	0.886	0.100	0.352		EPA-TO-15	03/13/2020	AD
o-Xylene	0.111	0.484	0.100	0.434		EPA-TO-15	03/13/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	03/13/2020	AD
Propylene	0.978	1.68	0.100	0.172	B*	EPA-TO-15	03/13/2020	AD
Styrene	0.114	0.487	0.100	0.426		EPA-TO-15	03/13/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	03/13/2020	AD
Tetrachloroethene (PCE)	0.105	0.712	0.0500	0.339		EPA-TO-15	03/13/2020	AD
Tetrahydrofuran	<0.100	<0.295	0.100	0.295		EPA-TO-15	03/13/2020	AD
Toluene	17.2	64.9	0.100	0.377	E	EPA-TO-15	03/13/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	03/13/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	03/13/2020	AD
Trichloroethene (TCE)	<0.0162	<0.0872	0.0162	0.0872		EPA-TO-15	03/13/2020	AD

Client: **Hart Crowser, Inc.**
WorkOrder: 2003205
Project: UMC

Client Sample ID: IA-1
Lab ID: 2003205-007A
Sample Type: Summa Canister

Date Sampled: 3/11/2020
Date Received: 3/12/2020

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
Trichlorofluoromethane (CFC-11)	0.299	1.68	0.100	0.562		EPA-TO-15	03/13/2020	AD
Vinyl acetate	<0.250	<0.880	0.250	0.880		EPA-TO-15	03/13/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	03/13/2020	AD
Surr: 4-Bromofluorobenzene	88.7 %Rec	--	70-130	--		EPA-TO-15	03/13/2020	AD

NOTES:
* - Flagged value is not within established control limits.
E - Estimated value. The amount exceeds the linear working range of the instrument.

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Helium by GC/TCD

Sample ID: **LCS-R58177** SampType: **LCS** Units: **ppt ‰** Prep Date: **3/20/2020** RunNo: **58177**
Client ID: **LCSW** Batch ID: **R58177** Analysis Date: **3/20/2020** SeqNo: **1162153**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Helium	109	100	100.0	0	109	80	120				

Sample ID: **MB-R58177** SampType: **MBLK** Units: **ppt ‰** Prep Date: **3/20/2020** RunNo: **58177**
Client ID: **MBLKW** Batch ID: **R58177** Analysis Date: **3/20/2020** SeqNo: **1162154**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Helium	ND	100									

NOTES:
PPT = Parts per Thousand

Sample ID: **2003205-002AREP** SampType: **REP** Units: **ppt ‰** Prep Date: **3/20/2020** RunNo: **58177**
Client ID: **SV-1** Batch ID: **R58177** Analysis Date: **3/20/2020** SeqNo: **1162150**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Helium	ND	157						0		30	D

NOTES:
PPT = Parts per Thousand

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58160** SampType: **LCS** Units: **ppbv** Prep Date: **3/20/2020** RunNo: **58160**
Client ID: **LCSW** Batch ID: **R58160** Analysis Date: **3/20/2020** SeqNo: **1161789**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyclohexane	1.76	0.400	2.000	0	88.1	70	130				
Trichloroethene (TCE)	2.26	0.0649	2.000	0	113	70	130				
1,2-Dichloropropane	2.03	0.500	2.000	0	101	70	130				
Methyl methacrylate	1.60	0.400	2.000	0	79.9	70	130				
Dichlorobromomethane	2.21	0.300	2.000	0	110	70	130				
1,4-Dioxane	1.99	0.400	2.000	0	99.7	70	130				
cis-1,3-dichloropropene	1.95	0.400	2.000	0	97.3	70	130				
Toluene	1.90	0.400	2.000	0	95.1	70	130				
trans-1,3-dichloropropene	1.86	0.500	2.000	0	93.1	70	130				
1,1,2-Trichloroethane (TCA)	1.97	0.500	2.000	0	98.3	70	130				
Tetrachloroethene (PCE)	2.08	0.200	2.000	0	104	70	130				
Dibromochloromethane	1.86	0.500	2.000	0	92.8	70	130				
1,2-Dibromoethane (EDB)	1.82	0.200	2.000	0	90.8	70	130				
Chlorobenzene	2.21	0.200	2.000	0	111	70	130				
Surr: 4-Bromofluorobenzene	3.96		4.000		98.9	70	130				

Sample ID: **MB-R58160** SampType: **MBLK** Units: **ppbv** Prep Date: **3/20/2020** RunNo: **58160**
Client ID: **MBLKW** Batch ID: **R58160** Analysis Date: **3/20/2020** SeqNo: **1161790**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyclohexane	ND	0.100									
Trichloroethene (TCE)	ND	0.0162									
1,2-Dichloropropane	ND	0.125									
Methyl methacrylate	ND	0.100									
Dichlorobromomethane	ND	0.0750									
1,4-Dioxane	ND	0.100									
cis-1,3-dichloropropene	ND	0.100									
Toluene	ND	0.100									
trans-1,3-dichloropropene	ND	0.125									
1,1,2-Trichloroethane (TCA)	ND	0.125									

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R58160** SampType: **MBLK** Units: **ppbv** Prep Date: **3/20/2020** RunNo: **58160**
Client ID: **MBLKW** Batch ID: **R58160** Analysis Date: **3/20/2020** SeqNo: **1161790**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	ND	0.0500									
Dibromochloromethane	ND	0.125									
1,2-Dibromoethane (EDB)	ND	0.0500									
Chlorobenzene	ND	0.0500									
Surr: 4-Bromofluorobenzene	0.669		1.000		66.9	70	130				S

NOTES:
S - Outlying surrogate recovery(ies) observed. All other laboratory and field samples recovered within range.

Sample ID: **2003205-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/20/2020** RunNo: **58160**
Client ID: **UA-1** Batch ID: **R58160** Analysis Date: **3/20/2020** SeqNo: **1161792**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyclohexane	ND	0.100						0		30	
Trichloroethene (TCE)	ND	0.0162						0		30	
1,2-Dichloropropane	ND	0.125						0		30	
Methyl methacrylate	ND	0.100						0		30	
Dichlorobromomethane	ND	0.0750						0		30	
1,4-Dioxane	ND	0.100						0		30	
cis-1,3-dichloropropene	ND	0.100						0		30	
Toluene	0.325	0.100						0.3631	11.0	30	
trans-1,3-dichloropropene	ND	0.125						0		30	
1,1,2-Trichloroethane (TCA)	ND	0.125						0		30	
Tetrachloroethene (PCE)	0.0880	0.0500						0.09564	8.28	30	
Dibromochloromethane	ND	0.125						0		30	
1,2-Dibromoethane (EDB)	ND	0.0500						0		30	
Chlorobenzene	ND	0.0500						0		30	
Surr: 4-Bromofluorobenzene	0.753		1.000		75.3	70	130		0		

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58119** SampType: **LCS** Units: **ppbv** Prep Date: **3/13/2020** RunNo: **58119**
Client ID: **LCSW** Batch ID: **R58119** Analysis Date: **3/13/2020** SeqNo: **1160596**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	1.72	0.400	2.000	0	86.0	70	130				
Dichlorodifluoromethane (CFC-12)	2.14	0.400	2.000	0	107	70	130				
Chloromethane	2.13	0.500	2.000	0	106	70	130				
Dichlorotetrafluoroethane (CFC-114)	1.90	0.400	2.000	0	95.1	70	130				
Vinyl chloride	1.92	0.107	2.000	0	95.9	70	130				
1,3-Butadiene	1.96	0.500	2.000	0	97.9	70	130				
Bromomethane	3.42	0.500	2.000	0	171	70	130				S
Trichlorofluoromethane (CFC-11)	2.07	0.400	2.000	0	103	70	130				
Chloroethane	2.13	0.400	2.000	0	107	70	130				
Acrolein	2.41	0.500	2.000	0	120	70	130				
1,1-Dichloroethene (DCE)	2.16	0.400	2.000	0	108	70	130				
Acetone	0.931	1.00	2.000	0	46.6	70	130				S
Isopropyl Alcohol	2.31	1.00	2.000	0	115	70	130				
Methylene chloride	2.11	2.00	2.000	0	105	70	130				
Carbon disulfide	2.41	1.50	2.000	0	120	70	130				
trans-1,2-Dichloroethene	2.12	0.200	2.000	0	106	70	130				
Methyl tert-butyl ether (MTBE)	2.04	0.400	2.000	0	102	70	130				
n-Hexane	1.92	0.400	2.000	0	95.8	70	130				
1,1-Dichloroethane	1.93	0.200	2.000	0	96.7	70	130				
Vinyl acetate	2.06	1.00	2.000	0	103	70	130				
cis-1,2-Dichloroethene	2.19	0.200	2.000	0	109	70	130				
(MEK) 2-Butanone	1.96	1.00	2.000	0	97.9	70	130				
Ethyl acetate	1.94	1.00	2.000	0	97.2	70	130				
Chloroform	1.91	0.200	2.000	0	95.5	70	130				
Tetrahydrofuran	1.77	0.400	2.000	0	88.4	70	130				
1,1,1-Trichloroethane	1.89	0.400	2.000	0	94.6	70	130				
Carbon tetrachloride	1.84	0.0657	2.000	0	92.2	70	130				
1,2-Dichloroethane	1.92	0.200	2.000	0	95.9	70	130				
Benzene	2.13	0.0895	2.000	0	106	70	130				
Cyclohexane	1.96	0.400	2.000	0	98.1	70	130				
Trichloroethene (TCE)	1.88	0.0649	2.000	0	94.0	70	130				

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58119** SampType: **LCS** Units: **ppbv** Prep Date: **3/13/2020** RunNo: **58119**
Client ID: **LCSW** Batch ID: **R58119** Analysis Date: **3/13/2020** SeqNo: **1160596**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	1.98	0.500	2.000	0	99.1	70	130				
Methyl methacrylate	1.90	0.400	2.000	0	94.9	70	130				
Dichlorobromomethane	2.01	0.300	2.000	0	101	70	130				
1,4-Dioxane	1.81	0.400	2.000	0	90.7	70	130				
cis-1,3-dichloropropene	1.91	0.400	2.000	0	95.6	70	130				
Toluene	1.85	0.400	2.000	0	92.3	70	130				
trans-1,3-dichloropropene	1.86	0.500	2.000	0	92.9	70	130				
1,1,2-Trichloroethane (TCA)	1.81	0.500	2.000	0	90.7	70	130				
Tetrachloroethene (PCE)	2.08	0.200	2.000	0	104	70	130				
Dibromochloromethane	1.73	0.500	2.000	0	86.6	70	130				
1,2-Dibromoethane (EDB)	1.87	0.200	2.000	0	93.7	70	130				
Chlorobenzene	2.16	0.200	2.000	0	108	70	130				
Ethylbenzene	1.81	0.400	2.000	0	90.4	70	130				
m,p-Xylene	3.69	0.800	4.000	0	92.2	70	130				
o-Xylene	1.77	0.400	2.000	0	88.6	70	130				
Styrene	1.70	0.400	2.000	0	84.9	70	130				
Bromoform	2.09	0.200	2.000	0	104	70	130				
1,1,2,2-Tetrachloroethane	2.01	0.300	2.000	0	100	70	130				
1,3,5-Trimethylbenzene	1.76	0.300	2.000	0	88.0	70	130				
1,2,4-Trimethylbenzene	1.57	0.300	2.000	0	78.5	70	130				
Benzyl chloride	2.34	0.500	2.000	0	117	70	130				
4-Ethyltoluene	1.69	0.400	2.000	0	84.4	70	130				
1,3-Dichlorobenzene	1.86	0.300	2.000	0	92.8	70	130				
1,4-Dichlorobenzene	1.72	0.300	2.000	0	86.0	70	130				
1,2-Dichlorobenzene	1.84	0.400	2.000	0	91.8	70	130				
1,2,4-Trichlorobenzene	2.57	0.300	2.000	0	129	70	130				
Hexachlorobutadiene	2.24	1.00	2.000	0	112	70	130				
Naphthalene	2.64	0.100	2.000	0	132	70	130				S
2-Hexanone	1.66	1.00	2.000	0	83.0	70	130				
4-Methyl-2-pentanone (MIBK)	1.66	1.00	2.000	0	82.9	70	130				
CFC-113	2.37	0.400	2.000	0	119	70	130				

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58119** SampType: **LCS** Units: **ppbv** Prep Date: **3/13/2020** RunNo: **58119**
Client ID: **LCSW** Batch ID: **R58119** Analysis Date: **3/13/2020** SeqNo: **1160596**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Heptane	2.10	0.400	2.000	0	105	70	130				
Surr: 4-Bromofluorobenzene	4.10		4.000		102	70	130				

NOTES:
S - Outlying spike recovery observed (high bias). Detections will be qualified with a *.
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

Sample ID: **MB-R58119** SampType: **MBLK** Units: **ppbv** Prep Date: **3/13/2020** RunNo: **58119**
Client ID: **MBLKW** Batch ID: **R58119** Analysis Date: **3/13/2020** SeqNo: **1160597**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	0.107	0.100									*
Dichlorodifluoromethane (CFC-12)	ND	0.100									
Chloromethane	ND	0.125									
Dichlorotetrafluoroethane (CFC-114)	ND	0.100									
Vinyl chloride	ND	0.0268									
1,3-Butadiene	ND	0.125									
Bromomethane	ND	0.125									
Trichlorofluoromethane (CFC-11)	ND	0.100									
Chloroethane	ND	0.100									
Acrolein	ND	0.125									
1,1-Dichloroethene (DCE)	ND	0.100									
Acetone	ND	0.250									*
Isopropyl Alcohol	ND	0.250									
Methylene chloride	ND	0.500									
Carbon disulfide	ND	0.375									
trans-1,2-Dichloroethene	ND	0.0500									
Methyl tert-butyl ether (MTBE)	ND	0.100									
n-Hexane	ND	0.100									
1,1-Dichloroethane	ND	0.0500									
Vinyl acetate	ND	0.250									
cis-1,2-Dichloroethene	ND	0.0500									

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R58119** SampType: **MBLK** Units: **ppbv** Prep Date: **3/13/2020** RunNo: **58119**
Client ID: **MBLKW** Batch ID: **R58119** Analysis Date: **3/13/2020** SeqNo: **1160597**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
(MEK) 2-Butanone	ND	0.250									
Ethyl acetate	ND	0.250									
Chloroform	ND	0.0500									
Tetrahydrofuran	ND	0.100									
1,1,1-Trichloroethane	ND	0.100									
Carbon tetrachloride	ND	0.0164									
1,2-Dichloroethane	ND	0.0500									
Benzene	ND	0.0224									
Cyclohexane	ND	0.100									
Trichloroethene (TCE)	ND	0.0162									
1,2-Dichloropropane	ND	0.125									
Methyl methacrylate	ND	0.100									
Dichlorobromomethane	ND	0.0750									
1,4-Dioxane	ND	0.100									
cis-1,3-dichloropropene	ND	0.100									
Toluene	ND	0.100									
trans-1,3-dichloropropene	ND	0.125									
1,1,2-Trichloroethane (TCA)	ND	0.125									
Tetrachloroethene (PCE)	ND	0.0500									
Dibromochloromethane	ND	0.125									
1,2-Dibromoethane (EDB)	ND	0.0500									
Chlorobenzene	ND	0.0500									
Ethylbenzene	ND	0.100									
m,p-Xylene	ND	0.200									
o-Xylene	ND	0.100									
Styrene	ND	0.100									
Bromoform	ND	0.0500									
1,1,2,2-Tetrachloroethane	ND	0.0750									
1,3,5-Trimethylbenzene	ND	0.0750									
1,2,4-Trimethylbenzene	ND	0.0750									
Benzyl chloride	ND	0.125									

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R58119** SampType: **MBLK** Units: **ppbv** Prep Date: **3/13/2020** RunNo: **58119**
Client ID: **MBLKW** Batch ID: **R58119** Analysis Date: **3/13/2020** SeqNo: **1160597**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Ethyltoluene	ND	0.100									
1,3-Dichlorobenzene	ND	0.0750									
1,4-Dichlorobenzene	ND	0.0750									
1,2-Dichlorobenzene	ND	0.100									
1,2,4-Trichlorobenzene	ND	0.0750									
Hexachlorobutadiene	ND	0.250									
Naphthalene	ND	0.0250									
2-Hexanone	ND	0.250									
4-Methyl-2-pentanone (MIBK)	ND	0.250									
CFC-113	ND	0.100									
Heptane	ND	0.100									
Surr: 4-Bromofluorobenzene	0.727		1.000		72.7	70	130				

NOTES:
* - Flagged value is not within established control limits.

Sample ID: **2003206-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/14/2020** RunNo: **58119**
Client ID: **BATCH** Batch ID: **R58119** Analysis Date: **3/14/2020** SeqNo: **1160603**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	ND	0.400						0		30	I*
Dichlorodifluoromethane (CFC-12)	ND	0.400						0.7408	200	30	RI
Chloromethane	ND	0.500						1.096	182	30	RI
Dichlorotetrafluoroethane (CFC-114)	ND	0.400						0		30	I
Vinyl chloride	ND	0.107						0		30	I
1,3-Butadiene	ND	0.500						0		30	I
Bromomethane	ND	0.500						0		30	I
Trichlorofluoromethane (CFC-11)	ND	0.400						0		30	I
Chloroethane	ND	0.400						0		30	I
Acrolein	ND	0.500						0		30	I
1,1-Dichloroethene (DCE)	ND	0.400						0		30	I
Acetone	ND	1.00						0		30	I*

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2003206-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/14/2020** RunNo: **58119**
Client ID: **BATCH** Batch ID: **R58119** Analysis Date: **3/14/2020** SeqNo: **1160603**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropyl Alcohol	2.61	1.00						2.892	10.1	30	I
Methylene chloride	ND	2.00						0		30	I
Carbon disulfide	ND	1.50						0		30	I
trans-1,2-Dichloroethene	ND	0.200						0		30	I
Methyl tert-butyl ether (MTBE)	ND	0.400						0		30	I
n-Hexane	ND	0.400						0		30	I
1,1-Dichloroethane	ND	0.200						0		30	I
Vinyl acetate	ND	1.00						0		30	I
cis-1,2-Dichloroethene	ND	0.200						0		30	I
(MEK) 2-Butanone	ND	1.00						0		30	I
Ethyl acetate	ND	1.00						0		30	I
Chloroform	ND	0.200						0		30	I
Tetrahydrofuran	ND	0.400						0		30	I
1,1,1-Trichloroethane	ND	0.400						0		30	I
Carbon tetrachloride	ND	0.0657						0		30	I
1,2-Dichloroethane	ND	0.200						0		30	I
Benzene	ND	0.0895						0		30	I
Cyclohexane	ND	0.400						0		30	I
Trichloroethene (TCE)	ND	0.0649						0		30	I
1,2-Dichloropropane	ND	0.500						0		30	I
Methyl methacrylate	ND	0.400						0		30	I
Dichlorobromomethane	ND	0.300						0		30	I
1,4-Dioxane	ND	0.400						0		30	I
cis-1,3-dichloropropene	ND	0.400						0		30	I
Toluene	ND	0.400						0		30	I
trans-1,3-dichloropropene	ND	0.500						0		30	I
1,1,2-Trichloroethane (TCA)	ND	0.500						0		30	I
Tetrachloroethene (PCE)	ND	0.200						0		30	I
Dibromochloromethane	ND	0.500						0		30	I
1,2-Dibromoethane (EDB)	ND	0.200						0		30	I
Chlorobenzene	ND	0.200						0		30	I

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2003206-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/14/2020** RunNo: **58119**
Client ID: **BATCH** Batch ID: **R58119** Analysis Date: **3/14/2020** SeqNo: **1160603**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	0.400						0		30	I
m,p-Xylene	ND	0.800						0		30	I
o-Xylene	ND	0.400						0		30	I
Styrene	ND	0.400						0		30	I
Bromoform	ND	0.200						0		30	I
1,1,2,2-Tetrachloroethane	ND	0.300						0		30	I
1,3,5-Trimethylbenzene	ND	0.300						0		30	I
1,2,4-Trimethylbenzene	ND	0.300						0		30	I
Benzyl chloride	ND	0.500						0		30	I
4-Ethyltoluene	ND	0.400						0		30	I
1,3-Dichlorobenzene	ND	0.300						0		30	I
1,4-Dichlorobenzene	ND	0.300						0		30	I
1,2-Dichlorobenzene	ND	0.400						0		30	I
1,2,4-Trichlorobenzene	ND	0.300						0		30	I
Hexachlorobutadiene	ND	1.00						0		30	I
Naphthalene	ND	0.100						0		30	I
2-Hexanone	ND	1.00						0		30	I
4-Methyl-2-pentanone (MIBK)	ND	1.00						0		30	I
CFC-113	ND	0.400						0		30	I
Heptane	ND	0.400						0		30	I
Surr: 4-Bromofluorobenzene	3.01		4.000		75.2	70	130		0		I

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.
I - Indicates an analyte with an internal standard that does not meet established acceptance criteria.

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58023B** SampType: **LCS** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **LCSW** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159374**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	80.5	1.00	72.00	0	112	70	130				
Propylene	2.27	0.400	2.000	0	113	70	130				
Dichlorodifluoromethane (CFC-12)	2.26	0.400	2.000	0	113	70	130				
Chloromethane	2.18	0.500	2.000	0	109	70	130				
Dichlorotetrafluoroethane (CFC-114)	2.21	0.400	2.000	0	110	70	130				
Vinyl chloride	2.20	0.107	2.000	0	110	70	130				
1,3-Butadiene	2.19	0.500	2.000	0	110	70	130				
Bromomethane	2.17	0.500	2.000	0	109	70	130				
Trichlorofluoromethane (CFC-11)	2.23	0.400	2.000	0	112	70	130				
Chloroethane	2.12	0.400	2.000	0	106	70	130				
Acrolein	2.33	0.500	2.000	0	116	70	130				
1,1-Dichloroethene (DCE)	2.25	0.400	2.000	0	112	70	130				
Acetone	2.31	1.00	2.000	0	115	70	130				
Isopropyl Alcohol	2.45	1.00	2.000	0	123	70	130				
Methylene chloride	2.20	2.00	2.000	0	110	70	130				
Carbon disulfide	2.07	1.50	2.000	0	103	70	130				
trans-1,2-Dichloroethene	2.18	0.200	2.000	0	109	70	130				
Methyl tert-butyl ether (MTBE)	2.43	0.400	2.000	0	122	70	130				
n-Hexane	2.21	0.400	2.000	0	110	70	130				
1,1-Dichloroethane	2.18	0.200	2.000	0	109	70	130				
Vinyl acetate	2.28	1.00	2.000	0	114	70	130				
cis-1,2-Dichloroethene	2.23	0.200	2.000	0	112	70	130				
(MEK) 2-Butanone	2.43	1.00	2.000	0	121	70	130				
Ethyl acetate	2.31	1.00	2.000	0	115	70	130				
Chloroform	2.13	0.200	2.000	0	106	70	130				
Tetrahydrofuran	2.24	0.400	2.000	0	112	70	130				
1,1,1-Trichloroethane	2.27	0.400	2.000	0	114	70	130				
Carbon tetrachloride	2.24	0.0657	2.000	0	112	70	130				
1,2-Dichloroethane	2.15	0.200	2.000	0	107	70	130				
Benzene	2.20	0.0895	2.000	0	110	70	130				
Cyclohexane	2.86	0.400	2.000	0	143	70	130				S

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58023B** SampType: **LCS** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **LCSW** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159374**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	2.22	0.0649	2.000	0	111	70	130				
1,2-Dichloropropane	2.20	0.500	2.000	0	110	70	130				
Methyl methacrylate	2.36	0.400	2.000	0	118	70	130				
Dichlorobromomethane	2.16	0.300	2.000	0	108	70	130				
1,4-Dioxane	2.14	0.400	2.000	0	107	70	130				
cis-1,3-dichloropropene	2.32	0.400	2.000	0	116	70	130				
Toluene	2.32	0.400	2.000	0	116	70	130				
trans-1,3-dichloropropene	2.37	0.500	2.000	0	118	70	130				
1,1,2-Trichloroethane (TCA)	2.15	0.500	2.000	0	107	70	130				
Tetrachloroethene (PCE)	2.25	0.200	2.000	0	112	70	130				
Dibromochloromethane	2.24	0.500	2.000	0	112	70	130				
1,2-Dibromoethane (EDB)	2.33	0.200	2.000	0	116	70	130				
Chlorobenzene	2.06	0.200	2.000	0	103	70	130				
Ethylbenzene	2.20	0.400	2.000	0	110	70	130				
m,p-Xylene	4.48	0.800	4.000	0	112	70	130				
o-Xylene	2.27	0.400	2.000	0	113	70	130				
Styrene	2.17	0.400	2.000	0	109	70	130				
Bromoform	2.08	0.200	2.000	0	104	70	130				
1,1,2,2-Tetrachloroethane	2.20	0.300	2.000	0	110	70	130				
1,3,5-Trimethylbenzene	2.17	0.300	2.000	0	109	70	130				
1,2,4-Trimethylbenzene	2.39	0.300	2.000	0	120	70	130				
Benzyl chloride	2.30	0.500	2.000	0	115	70	130				
4-Ethyltoluene	2.21	0.400	2.000	0	111	70	130				
1,3-Dichlorobenzene	2.21	0.300	2.000	0	111	70	130				
1,4-Dichlorobenzene	2.20	0.300	2.000	0	110	70	130				
1,2-Dichlorobenzene	2.21	0.400	2.000	0	110	70	130				
1,2,4-Trichlorobenzene	2.29	0.300	2.000	0	114	70	130				
Hexachlorobutadiene	2.08	1.00	2.000	0	104	70	130				
Naphthalene	2.57	0.100	2.000	0	129	70	130				
2-Hexanone	2.35	1.00	2.000	0	118	70	130				
4-Methyl-2-pentanone (MIBK)	2.20	1.00	2.000	0	110	70	130				

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58023B** SampType: **LCS** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **LCSW** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159374**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
CFC-113	2.03	0.400	2.000	0	102	70	130				
Heptane	2.07	0.400	2.000	0	103	70	130				
Surr: 4-Bromofluorobenzene	3.94		4.000		98.5	70	130				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect for this analyte; no further action required.

Sample ID: **MB-R58023B** SampType: **MBLK** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **MBLKW** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159375**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	ND	1.00									
Propylene	ND	0.400									
Dichlorodifluoromethane (CFC-12)	ND	0.400									
Chloromethane	ND	0.500									
Dichlorotetrafluoroethane (CFC-114)	ND	0.400									
Vinyl chloride	ND	0.107									
1,3-Butadiene	ND	0.500									
Bromomethane	ND	0.500									
Trichlorofluoromethane (CFC-11)	ND	0.400									
Chloroethane	ND	0.400									
Acrolein	ND	0.500									
1,1-Dichloroethene (DCE)	ND	0.400									
Acetone	ND	1.00									
Isopropyl Alcohol	ND	1.00									
Methylene chloride	ND	2.00									
Carbon disulfide	ND	1.50									
trans-1,2-Dichloroethene	ND	0.200									
Methyl tert-butyl ether (MTBE)	ND	0.400									
n-Hexane	ND	0.400									
1,1-Dichloroethane	ND	0.200									
Vinyl acetate	ND	1.00									

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R58023B** SampType: **MBLK** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **MBLKW** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159375**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.200									
(MEK) 2-Butanone	ND	1.00									
Ethyl acetate	ND	1.00									
Chloroform	ND	0.200									
Tetrahydrofuran	ND	0.400									
1,1,1-Trichloroethane	ND	0.400									
Carbon tetrachloride	ND	0.0657									
1,2-Dichloroethane	ND	0.200									
Benzene	ND	0.0895									
Cyclohexane	ND	0.400									
Trichloroethene (TCE)	ND	0.0649									
1,2-Dichloropropane	ND	0.500									
Methyl methacrylate	ND	0.400									
Dichlorobromomethane	ND	0.300									
1,4-Dioxane	ND	0.400									
cis-1,3-dichloropropene	ND	0.400									
Toluene	ND	0.400									
trans-1,3-dichloropropene	ND	0.500									
1,1,2-Trichloroethane (TCA)	ND	0.500									
Tetrachloroethene (PCE)	ND	0.200									
Dibromochloromethane	ND	0.500									
1,2-Dibromoethane (EDB)	ND	0.200									
Chlorobenzene	ND	0.200									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	0.800									
o-Xylene	ND	0.400									
Styrene	ND	0.400									
Bromoform	ND	0.200									
1,1,2,2-Tetrachloroethane	ND	0.300									
1,3,5-Trimethylbenzene	ND	0.300									
1,2,4-Trimethylbenzene	ND	0.300									

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R58023B** SampType: **MBLK** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **MBLKW** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159375**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzyl chloride	ND	0.500									
4-Ethyltoluene	ND	0.400									
1,3-Dichlorobenzene	ND	0.300									
1,4-Dichlorobenzene	ND	0.300									
1,2-Dichlorobenzene	ND	0.400									
1,2,4-Trichlorobenzene	ND	0.300									
Hexachlorobutadiene	ND	1.00									
Naphthalene	ND	0.100									
2-Hexanone	ND	1.00									
4-Methyl-2-pentanone (MIBK)	ND	1.00									
CFC-113	ND	0.400									
Heptane	ND	0.400									
Surr: 4-Bromofluorobenzene	3.59		4.000		89.7	70	130				

Sample ID: **2003205-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **SV-1** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159377**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	62.7	4.00						42.11	39.3	30	R
Dichlorodifluoromethane (CFC-12)	ND	4.00						0		30	
Chloromethane	ND	5.00						0		30	
Dichlorotetrafluoroethane (CFC-114)	ND	4.00						0		30	
Vinyl chloride	2.83	1.07						2.293	21.1	30	
1,3-Butadiene	ND	5.00						0		30	
Bromomethane	ND	5.00						0		30	
Trichlorofluoromethane (CFC-11)	ND	4.00						0		30	
Chloroethane	ND	4.00						0		30	
Acrolein	ND	5.00						0		30	
1,1-Dichloroethene (DCE)	ND	4.00						0		30	
Acetone	52.5	10.0						33.83	43.2	30	R

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2003205-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **SV-1** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159377**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropyl Alcohol	2,140	10.0						1,871	13.6	30	E
Methylene chloride	ND	20.0						0		30	
Carbon disulfide	ND	15.0						0		30	
trans-1,2-Dichloroethene	ND	2.00						0		30	
Methyl tert-butyl ether (MTBE)	ND	4.00						0		30	
n-Hexane	ND	4.00						0		30	
1,1-Dichloroethane	ND	2.00						0		30	
Vinyl acetate	ND	10.0						0		30	
cis-1,2-Dichloroethene	18.6	2.00						15.09	21.1	30	
(MEK) 2-Butanone	ND	10.0						0		30	
Ethyl acetate	ND	10.0						0		30	
Chloroform	ND	2.00						0		30	
Tetrahydrofuran	ND	4.00						0		30	
1,1,1-Trichloroethane	ND	4.00						0		30	
Carbon tetrachloride	ND	0.657						0		30	
1,2-Dichloroethane	ND	2.00						0		30	
Benzene	1.47	0.895						1.250	16.1	30	
Cyclohexane	ND	4.00						0		30	
Trichloroethene (TCE)	32.1	0.649						26.35	19.8	30	
1,2-Dichloropropane	ND	5.00						0		30	
Methyl methacrylate	ND	4.00						0		30	
Dichlorobromomethane	ND	3.00						0		30	
1,4-Dioxane	ND	4.00						0		30	
cis-1,3-dichloropropene	ND	4.00						0		30	
Toluene	5.96	4.00						4.820	21.1	30	
trans-1,3-dichloropropene	ND	5.00						0		30	
1,1,2-Trichloroethane (TCA)	ND	5.00						0		30	
Tetrachloroethene (PCE)	46.9	2.00						37.77	21.5	30	
Dibromochloromethane	ND	5.00						0		30	
1,2-Dibromoethane (EDB)	ND	2.00						0		30	
Chlorobenzene	ND	2.00						0		30	

Work Order: 2003205
CLIENT: Hart Crowser, Inc.
Project: UMC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2003205-002AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/16/2020** RunNo: **58023**
Client ID: **SV-1** Batch ID: **R58023** Analysis Date: **3/16/2020** SeqNo: **1159377**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	4.00						0		30	
m,p-Xylene	ND	8.00						0		30	
o-Xylene	ND	4.00						0		30	
Styrene	ND	4.00						0		30	
Bromoform	ND	2.00						0		30	
1,1,2,2-Tetrachloroethane	ND	3.00						0		30	
1,3,5-Trimethylbenzene	ND	3.00						0		30	
1,2,4-Trimethylbenzene	ND	3.00						0		30	
Benzyl chloride	ND	5.00						0		30	
4-Ethyltoluene	ND	4.00						0		30	
1,3-Dichlorobenzene	3.02	3.00						2.204	31.2	30	
1,4-Dichlorobenzene	3.13	3.00						2.286	31.2	30	
1,2-Dichlorobenzene	ND	4.00						0		30	
1,2,4-Trichlorobenzene	ND	3.00						0		30	
Hexachlorobutadiene	ND	10.0						0		30	
Naphthalene	ND	1.00						0		30	
2-Hexanone	ND	10.0						0		30	
4-Methyl-2-pentanone (MIBK)	ND	10.0						0		30	
CFC-113	ND	4.00						0		30	
Heptane	ND	4.00						0		30	
Surr: 4-Bromofluorobenzene	37.4		40.00		93.6	70	130		0		

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Sample Log-In Check List

Client Name:	**HART**	Work Order Number:	**2003205**
Logged by:	**Clare Griggs**	Date Received:	**3/12/2020 1:00:00 PM**

Chain of Custody

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

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 Required ☑
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

ADDRESS
Fremont Analytical, Inc.
3600 Fremont Ave N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178
Website: www.fremontanalytical.com

Certificate of Analysis

Batch ID: 472 **Start Date:** 3/6/2020 10:04:43 AM
Comment:

Cleaning Batch Members:

Canister ID	Lot# / Serial#	Canister Type	Volume (Liters)
12671	12671	Summa w/FR	6
12673	12673	Summa w/FR	6
15422	15422	Summa w/FR	6
15894	15894	Summa w/FR	6
17237	17237	Summa w/FR	6
17242	17242	Summa w/FR	6
17637	17637	Summa w/FR	6
34754	6L Silonite Canister w/NUPRO	Silonite Canister w/NUPRO	6

Canisters from batch cleaning verification results:

Canister ID: 12673 **Test Code:** A-TO15-VOC **SeqNo:** 1154632
Expiration Date: **Method No:** EPA-TO-15 **Analysis Date:** 3/6/2020 12:16:40 AM

Analyte	Unit	Result	Analyte	Unit	Result	Analyte	Unit	Result
4-Bromofluorobenzene	%REC	0.785	Propylene	ppbv	< 0.100	Dichlorodifluoromethane	ppbv	< 0.100
Chloromethane	ppbv	< 0.125	Dichlorotetrafluoroethane	ppbv	< 0.100	Vinyl chloride	ppbv	< 0.0268
1,3-Butadiene	ppbv	< 0.125	Bromomethane	ppbv	< 0.125	Trichlorofluoromethane	ppbv	< 0.100
Chloroethane	ppbv	< 0.100	Acrolein	ppbv	< 0.125	1,1-Dichloroethene	ppbv	< 0.100
Acetone	ppbv	< 0.250	2-Propanol	ppbv	< 0.250	Methylene chloride	ppbv	< 0.500
Carbon disulfide	ppbv	< 0.375	trans-1,2-Dichloroethene	ppbv	< 0.0500	tert-Butyl Methyl Ether	ppbv	< 0.100
n-Hexane	ppbv	< 0.100	1,1-Dichloroethane	ppbv	< 0.0500	Vinyl acetate	ppbv	< 0.250
cis-1,2-Dichloroethene	ppbv	< 0.0500	2-Butanone	ppbv	< 0.250	Ethyl acetate	ppbv	< 0.250
Chloroform	ppbv	< 0.0500	Tetrahydrofuran	ppbv	< 0.100	1,1,1-Trichloroethane	ppbv	< 0.100
Carbon tetrachloride	ppbv	< 0.0164	1,2-Dichloroethane	ppbv	< 0.0500	Benzene	ppbv	< 0.0224
Cyclohexane	ppbv	< 0.100	Trichloroethene	ppbv	< 0.0162	1,2-Dichloropropane	ppbv	< 0.125
Methyl methacrylate	ppbv	< 0.100	Bromodichloromethane	ppbv	< 0.0750	1,4-Dioxane	ppbv	< 0.100
cis-1,3-dichloropropene	ppbv	< 0.100	Toluene	ppbv	< 0.100	trans-1,3-dichloropropene	ppbv	< 0.125
1,1,2-Trichloroethane	ppbv	< 0.125	Tetrachloroethene	ppbv	< 0.0500	Chlorodibromomethane	ppbv	< 0.125
1,2-Dibromoethane	ppbv	< 0.0500	Chlorobenzene	ppbv	< 0.0500	Ethylbenzene	ppbv	< 0.100
m,p-Xylene	ppbv	< 0.200	o-Xylene	ppbv	< 0.100	Styrene	ppbv	< 0.100
Bromoform	ppbv	< 0.0500	1,1,2,2-Tetrachloroethane	ppbv	< 0.0750	1,3,5-Trimethylbenzene	ppbv	< 0.0750
1,2,4-Trimethylbenzene	ppbv	< 0.0750	Benzyl chloride	ppbv	< 0.125	p-Ethyltoluene	ppbv	< 0.100
1,3-Dichlorobenzene	ppbv	< 0.0750	1,4-Dichlorobenzene	ppbv	< 0.0750	1,2-Dichlorobenzene	ppbv	< 0.100
1,2,4-Trichlorobenzene	ppbv	< 0.0750	Hexachlorobutadiene	ppbv	< 0.250	Naphthalene	ppbv	< 0.0250
2-Hexanone	ppbv	< 0.250	4-Methyl-2-pentanone	ppbv	< 0.250	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	< 0.100
Heptane	ppbv	< 0.100						

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Certificate of Analysis

Batch ID: 472 **Start Date:** 3/6/2020 10:04:43 AM
Comment:

Cleaning Batch Members:

Canister ID	Lot# / Serial#	Canister Type	Volume (Liters)
12671	12671	Summa w/FR	6
12673	12673	Summa w/FR	6
15422	15422	Summa w/FR	6
15894	15894	Summa w/FR	6
17237	17237	Summa w/FR	6
17242	17242	Summa w/FR	6
17637	17637	Summa w/FR	6
34754	6L Silonite Canister w/NUPRO	Silonite Canister w/NUPRO	6

Canisters from batch cleaning verification results:

Canister ID: 15422 **Test Code:** A-TO15-VOC **SeqNo:** 1154628
Expiration Date: **Method No:** EPA-TO-15 **Analysis Date:** 3/5/2020 8:30:50 PM

Analyte	Unit	Result	Analyte	Unit	Result	Analyte	Unit	Result
4-Bromofluorobenzene	%REC	0.807	Propylene	ppbv	< 0.100	Dichlorodifluoromethane	ppbv	< 0.100
Chloromethane	ppbv	< 0.125	Dichlorotetrafluoroethane	ppbv	< 0.100	Vinyl chloride	ppbv	< 0.0268
1,3-Butadiene	ppbv	< 0.125	Bromomethane	ppbv	< 0.125	Trichlorofluoromethane	ppbv	< 0.100
Chloroethane	ppbv	< 0.100	Acrolein	ppbv	< 0.125	1,1-Dichloroethene	ppbv	< 0.100
Acetone	ppbv	< 0.250	2-Propanol	ppbv	< 0.250	Methylene chloride	ppbv	< 0.500
Carbon disulfide	ppbv	< 0.375	trans-1,2-Dichloroethene	ppbv	< 0.0500	tert-Butyl Methyl Ether	ppbv	< 0.100
n-Hexane	ppbv	< 0.100	1,1-Dichloroethane	ppbv	< 0.0500	Vinyl acetate	ppbv	< 0.250
cis-1,2-Dichloroethene	ppbv	< 0.0500	2-Butanone	ppbv	< 0.250	Ethyl acetate	ppbv	< 0.250
Chloroform	ppbv	< 0.0500	Tetrahydrofuran	ppbv	< 0.100	1,1,1-Trichloroethane	ppbv	< 0.100
Carbon tetrachloride	ppbv	< 0.0164	1,2-Dichloroethane	ppbv	< 0.0500	Benzene	ppbv	< 0.0224
Cyclohexane	ppbv	< 0.100	Trichloroethene	ppbv	< 0.0162	1,2-Dichloropropane	ppbv	< 0.125
Methyl methacrylate	ppbv	< 0.100	Bromodichloromethane	ppbv	< 0.0750	1,4-Dioxane	ppbv	< 0.100
cis-1,3-dichloropropene	ppbv	< 0.100	Toluene	ppbv	< 0.100	trans-1,3-dichloropropene	ppbv	< 0.125
1,1,2-Trichloroethane	ppbv	< 0.125	Tetrachloroethene	ppbv	< 0.0500	Chlorodibromomethane	ppbv	< 0.125
1,2-Dibromoethane	ppbv	< 0.0500	Chlorobenzene	ppbv	< 0.0500	Ethylbenzene	ppbv	< 0.100
m,p-Xylene	ppbv	< 0.200	o-Xylene	ppbv	< 0.100	Styrene	ppbv	< 0.100
Bromoform	ppbv	< 0.0500	1,1,2,2-Tetrachloroethane	ppbv	< 0.0750	1,3,5-Trimethylbenzene	ppbv	< 0.0750
1,2,4-Trimethylbenzene	ppbv	< 0.0750	Benzyl chloride	ppbv	< 0.125	p-Ethyltoluene	ppbv	< 0.100
1,3-Dichlorobenzene	ppbv	< 0.0750	1,4-Dichlorobenzene	ppbv	< 0.0750	1,2-Dichlorobenzene	ppbv	< 0.100
1,2,4-Trichlorobenzene	ppbv	< 0.0750	Hexachlorobutadiene	ppbv	< 0.250	Naphthalene	ppbv	< 0.0250
2-Hexanone	ppbv	< 0.250	4-Methyl-2-pentanone	ppbv	< 0.250	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	< 0.100
Heptane	ppbv	< 0.100						

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FAX: 206-352-7178
Website: www.fremontanalytical.com

Certificate of Analysis

Batch ID: 472 **Start Date:** 3/6/2020 10:04:43 AM
Comment:

Cleaning Batch Members:

Canister ID	Lot# / Serial#	Canister Type	Volume (Liters)
12671	12671	Summa w/FR	6
12673	12673	Summa w/FR	6
15422	15422	Summa w/FR	6
15894	15894	Summa w/FR	6
17237	17237	Summa w/FR	6
17242	17242	Summa w/FR	6
17637	17637	Summa w/FR	6
34754	6L Silonite Canister w/NUPRO	Silonite Canister w/NUPRO	6

Canisters from batch cleaning verification results:

Canister ID: 15894 **Test Code:** A-TO15-VOC **SeqNo:** 1154633
Expiration Date: **Method No:** EPA-TO-15 **Analysis Date:** 3/6/2020 1:12:54 AM

Analyte	Unit	Result	Analyte	Unit	Result	Analyte	Unit	Result
4-Bromofluorobenzene	%REC	0.813	Propylene	ppbv	< 0.100	Dichlorodifluoromethane	ppbv	< 0.100
Chloromethane	ppbv	< 0.125	Dichlorotetrafluoroethane	ppbv	< 0.100	Vinyl chloride	ppbv	< 0.0268
1,3-Butadiene	ppbv	< 0.125	Bromomethane	ppbv	< 0.125	Trichlorofluoromethane	ppbv	< 0.100
Chloroethane	ppbv	< 0.100	Acrolein	ppbv	< 0.125	1,1-Dichloroethene	ppbv	< 0.100
Acetone	ppbv	< 0.250	2-Propanol	ppbv	< 0.250	Methylene chloride	ppbv	< 0.500
Carbon disulfide	ppbv	< 0.375	trans-1,2-Dichloroethene	ppbv	< 0.0500	tert-Butyl Methyl Ether	ppbv	< 0.100
n-Hexane	ppbv	< 0.100	1,1-Dichloroethane	ppbv	< 0.0500	Vinyl acetate	ppbv	< 0.250
cis-1,2-Dichloroethene	ppbv	< 0.0500	2-Butanone	ppbv	< 0.250	Ethyl acetate	ppbv	< 0.250
Chloroform	ppbv	< 0.0500	Tetrahydrofuran	ppbv	< 0.100	1,1,1-Trichloroethane	ppbv	< 0.100
Carbon tetrachloride	ppbv	< 0.0164	1,2-Dichloroethane	ppbv	< 0.0500	Benzene	ppbv	< 0.0224
Cyclohexane	ppbv	< 0.100	Trichloroethene	ppbv	< 0.0162	1,2-Dichloropropane	ppbv	< 0.125
Methyl methacrylate	ppbv	< 0.100	Bromodichloromethane	ppbv	< 0.0750	1,4-Dioxane	ppbv	< 0.100
cis-1,3-dichloropropene	ppbv	< 0.100	Toluene	ppbv	< 0.100	trans-1,3-dichloropropene	ppbv	< 0.125
1,1,2-Trichloroethane	ppbv	< 0.125	Tetrachloroethene	ppbv	< 0.0500	Chlorodibromomethane	ppbv	< 0.125
1,2-Dibromoethane	ppbv	< 0.0500	Chlorobenzene	ppbv	< 0.0500	Ethylbenzene	ppbv	< 0.100
m,p-Xylene	ppbv	< 0.200	o-Xylene	ppbv	< 0.100	Styrene	ppbv	< 0.100
Bromoform	ppbv	< 0.0500	1,1,2,2-Tetrachloroethane	ppbv	< 0.0750	1,3,5-Trimethylbenzene	ppbv	< 0.0750
1,2,4-Trimethylbenzene	ppbv	< 0.0750	Benzyl chloride	ppbv	< 0.125	p-Ethyltoluene	ppbv	< 0.100
1,3-Dichlorobenzene	ppbv	< 0.0750	1,4-Dichlorobenzene	ppbv	< 0.0750	1,2-Dichlorobenzene	ppbv	< 0.100
1,2,4-Trichlorobenzene	ppbv	< 0.0750	Hexachlorobutadiene	ppbv	< 0.250	Naphthalene	ppbv	< 0.0250
2-Hexanone	ppbv	< 0.250	4-Methyl-2-pentanone	ppbv	< 0.250	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	< 0.100
Heptane	ppbv	< 0.100						

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Certificate of Analysis

Batch ID: 472 **Start Date:** 3/6/2020 10:04:43 AM
Comment:

Cleaning Batch Members:

Canister ID	Lot# / Serial#	Canister Type	Volume (Liters)
12671	12671	Summa w/FR	6
12673	12673	Summa w/FR	6
15422	15422	Summa w/FR	6
15894	15894	Summa w/FR	6
17237	17237	Summa w/FR	6
17242	17242	Summa w/FR	6
17637	17637	Summa w/FR	6
34754	6L Silonite Canister w/NUPRO	Silonite Canister w/NUPRO	6

Canisters from batch cleaning verification results:

Canister ID: 17237 **Test Code:** A-TO15-VOC **SeqNo:** 1154635
Expiration Date: **Method No:** EPA-TO-15 **Analysis Date:** 3/6/2020 3:05:12 AM

Analyte	Unit	Result	Analyte	Unit	Result	Analyte	Unit	Result
4-Bromofluorobenzene	%REC	0.824	Propylene	ppbv	< 0.100	Dichlorodifluoromethane	ppbv	< 0.100
Chloromethane	ppbv	< 0.125	Dichlorotetrafluoroethane	ppbv	< 0.100	Vinyl chloride	ppbv	< 0.0268
1,3-Butadiene	ppbv	< 0.125	Bromomethane	ppbv	< 0.125	Trichlorofluoromethane	ppbv	< 0.100
Chloroethane	ppbv	< 0.100	Acrolein	ppbv	< 0.125	1,1-Dichloroethene	ppbv	< 0.100
Acetone	ppbv	< 0.250	2-Propanol	ppbv	< 0.250	Methylene chloride	ppbv	< 0.500
Carbon disulfide	ppbv	< 0.375	trans-1,2-Dichloroethene	ppbv	< 0.0500	tert-Butyl Methyl Ether	ppbv	< 0.100
n-Hexane	ppbv	< 0.100	1,1-Dichloroethane	ppbv	< 0.0500	Vinyl acetate	ppbv	< 0.250
cis-1,2-Dichloroethene	ppbv	< 0.0500	2-Butanone	ppbv	< 0.250	Ethyl acetate	ppbv	< 0.250
Chloroform	ppbv	< 0.0500	Tetrahydrofuran	ppbv	< 0.100	1,1,1-Trichloroethane	ppbv	< 0.100
Carbon tetrachloride	ppbv	< 0.0164	1,2-Dichloroethane	ppbv	< 0.0500	Benzene	ppbv	< 0.0224
Cyclohexane	ppbv	< 0.100	Trichloroethene	ppbv	< 0.0162	1,2-Dichloropropane	ppbv	< 0.125
Methyl methacrylate	ppbv	< 0.100	Bromodichloromethane	ppbv	< 0.0750	1,4-Dioxane	ppbv	< 0.100
cis-1,3-dichloropropene	ppbv	< 0.100	Toluene	ppbv	< 0.100	trans-1,3-dichloropropene	ppbv	< 0.125
1,1,2-Trichloroethane	ppbv	< 0.125	Tetrachloroethene	ppbv	< 0.0500	Chlorodibromomethane	ppbv	< 0.125
1,2-Dibromoethane	ppbv	< 0.0500	Chlorobenzene	ppbv	< 0.0500	Ethylbenzene	ppbv	< 0.100
m,p-Xylene	ppbv	< 0.200	o-Xylene	ppbv	< 0.100	Styrene	ppbv	< 0.100
Bromoform	ppbv	< 0.0500	1,1,2,2-Tetrachloroethane	ppbv	< 0.0750	1,3,5-Trimethylbenzene	ppbv	< 0.0750
1,2,4-Trimethylbenzene	ppbv	< 0.0750	Benzyl chloride	ppbv	< 0.125	p-Ethyltoluene	ppbv	< 0.100
1,3-Dichlorobenzene	ppbv	< 0.0750	1,4-Dichlorobenzene	ppbv	< 0.0750	1,2-Dichlorobenzene	ppbv	< 0.100
1,2,4-Trichlorobenzene	ppbv	< 0.0750	Hexachlorobutadiene	ppbv	< 0.250	Naphthalene	ppbv	< 0.0250
2-Hexanone	ppbv	< 0.250	4-Methyl-2-pentanone	ppbv	< 0.250	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	< 0.100
Heptane	ppbv	< 0.100						

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Certificate of Analysis

Batch ID: 472 **Start Date:** 3/6/2020 10:04:43 AM
Comment:

Cleaning Batch Members:

Canister ID	Lot# / Serial#	Canister Type	Volume (Liters)
12671	12671	Summa w/FR	6
12673	12673	Summa w/FR	6
15422	15422	Summa w/FR	6
15894	15894	Summa w/FR	6
17237	17237	Summa w/FR	6
17242	17242	Summa w/FR	6
17637	17637	Summa w/FR	6
34754	6L Silonite Canister w/NUPRO	Silonite Canister w/NUPRO	6

Canisters from batch cleaning verification results:

Canister ID: 17242 **Test Code:** A-TO15-VOC **SeqNo:** 1154630
Expiration Date: **Method No:** EPA-TO-15 **Analysis Date:** 3/5/2020 10:23:45 PM

Analyte	Unit	Result	Analyte	Unit	Result	Analyte	Unit	Result
4-Bromofluorobenzene	%REC	0.797	Propylene	ppbv	< 0.100	Dichlorodifluoromethane	ppbv	< 0.100
Chloromethane	ppbv	< 0.125	Dichlorotetrafluoroethane	ppbv	< 0.100	Vinyl chloride	ppbv	< 0.0268
1,3-Butadiene	ppbv	< 0.125	Bromomethane	ppbv	< 0.125	Trichlorofluoromethane	ppbv	< 0.100
Chloroethane	ppbv	< 0.100	Acrolein	ppbv	< 0.125	1,1-Dichloroethene	ppbv	< 0.100
Acetone	ppbv	< 0.250	2-Propanol	ppbv	< 0.250	Methylene chloride	ppbv	< 0.500
Carbon disulfide	ppbv	< 0.375	trans-1,2-Dichloroethene	ppbv	< 0.0500	tert-Butyl Methyl Ether	ppbv	< 0.100
n-Hexane	ppbv	< 0.100	1,1-Dichloroethane	ppbv	< 0.0500	Vinyl acetate	ppbv	< 0.250
cis-1,2-Dichloroethene	ppbv	< 0.0500	2-Butanone	ppbv	< 0.250	Ethyl acetate	ppbv	< 0.250
Chloroform	ppbv	< 0.0500	Tetrahydrofuran	ppbv	< 0.100	1,1,1-Trichloroethane	ppbv	< 0.100
Carbon tetrachloride	ppbv	< 0.0164	1,2-Dichloroethane	ppbv	< 0.0500	Benzene	ppbv	< 0.0224
Cyclohexane	ppbv	< 0.100	Trichloroethene	ppbv	< 0.0162	1,2-Dichloropropane	ppbv	< 0.125
Methyl methacrylate	ppbv	< 0.100	Bromodichloromethane	ppbv	< 0.0750	1,4-Dioxane	ppbv	< 0.100
cis-1,3-dichloropropene	ppbv	< 0.100	Toluene	ppbv	< 0.100	trans-1,3-dichloropropene	ppbv	< 0.125
1,1,2-Trichloroethane	ppbv	< 0.125	Tetrachloroethene	ppbv	< 0.0500	Chlorodibromomethane	ppbv	< 0.125
1,2-Dibromoethane	ppbv	< 0.0500	Chlorobenzene	ppbv	< 0.0500	Ethylbenzene	ppbv	< 0.100
m,p-Xylene	ppbv	< 0.200	o-Xylene	ppbv	< 0.100	Styrene	ppbv	< 0.100
Bromoform	ppbv	< 0.0500	1,1,2,2-Tetrachloroethane	ppbv	< 0.0750	1,3,5-Trimethylbenzene	ppbv	< 0.0750
1,2,4-Trimethylbenzene	ppbv	< 0.0750	Benzyl chloride	ppbv	< 0.125	p-Ethyltoluene	ppbv	< 0.100
1,3-Dichlorobenzene	ppbv	< 0.0750	1,4-Dichlorobenzene	ppbv	< 0.0750	1,2-Dichlorobenzene	ppbv	< 0.100
1,2,4-Trichlorobenzene	ppbv	< 0.0750	Hexachlorobutadiene	ppbv	< 0.250	Naphthalene	ppbv	< 0.0250
2-Hexanone	ppbv	< 0.250	4-Methyl-2-pentanone	ppbv	< 0.250	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	< 0.100
Heptane	ppbv	< 0.100						

ADDRESS
Fremont Analytical, Inc.
3600 Fremont Ave N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178
Website: www.fremontanalytical.com

Certificate of Analysis

Batch ID: 472 **Start Date:** 3/6/2020 10:04:43 AM
Comment:

Cleaning Batch Members:

Canister ID	Lot# / Serial#	Canister Type	Volume (Liters)
12671	12671	Summa w/FR	6
12673	12673	Summa w/FR	6
15422	15422	Summa w/FR	6
15894	15894	Summa w/FR	6
17237	17237	Summa w/FR	6
17242	17242	Summa w/FR	6
17637	17637	Summa w/FR	6
34754	6L Silonite Canister w/NUPRO	Silonite Canister w/NUPRO	6

Canisters from batch cleaning verification results:

Canister ID: 17637 **Test Code:** A-TO15-VOC **SeqNo:** 1154634
Expiration Date: **Method No:** EPA-TO-15 **Analysis Date:** 3/6/2020 2:08:59 AM

Analyte	Unit	Result	Analyte	Unit	Result	Analyte	Unit	Result
4-Bromofluorobenzene	%REC	0.803	Propylene	ppbv	< 0.100	Dichlorodifluoromethane	ppbv	< 0.100
Chloromethane	ppbv	< 0.125	Dichlorotetrafluoroethane	ppbv	< 0.100	Vinyl chloride	ppbv	< 0.0268
1,3-Butadiene	ppbv	< 0.125	Bromomethane	ppbv	< 0.125	Trichlorofluoromethane	ppbv	< 0.100
Chloroethane	ppbv	< 0.100	Acrolein	ppbv	< 0.125	1,1-Dichloroethene	ppbv	< 0.100
Acetone	ppbv	< 0.250	2-Propanol	ppbv	< 0.250	Methylene chloride	ppbv	< 0.500
Carbon disulfide	ppbv	< 0.375	trans-1,2-Dichloroethene	ppbv	< 0.0500	tert-Butyl Methyl Ether	ppbv	< 0.100
n-Hexane	ppbv	< 0.100	1,1-Dichloroethane	ppbv	< 0.0500	Vinyl acetate	ppbv	< 0.250
cis-1,2-Dichloroethene	ppbv	< 0.0500	2-Butanone	ppbv	< 0.250	Ethyl acetate	ppbv	< 0.250
Chloroform	ppbv	< 0.0500	Tetrahydrofuran	ppbv	< 0.100	1,1,1-Trichloroethane	ppbv	< 0.100
Carbon tetrachloride	ppbv	< 0.0164	1,2-Dichloroethane	ppbv	< 0.0500	Benzene	ppbv	< 0.0224
Cyclohexane	ppbv	< 0.100	Trichloroethene	ppbv	< 0.0162	1,2-Dichloropropane	ppbv	< 0.125
Methyl methacrylate	ppbv	< 0.100	Bromodichloromethane	ppbv	< 0.0750	1,4-Dioxane	ppbv	< 0.100
cis-1,3-dichloropropene	ppbv	< 0.100	Toluene	ppbv	< 0.100	trans-1,3-dichloropropene	ppbv	< 0.125
1,1,2-Trichloroethane	ppbv	< 0.125	Tetrachloroethene	ppbv	< 0.0500	Chlorodibromomethane	ppbv	< 0.125
1,2-Dibromoethane	ppbv	< 0.0500	Chlorobenzene	ppbv	< 0.0500	Ethylbenzene	ppbv	< 0.100
m,p-Xylene	ppbv	< 0.200	o-Xylene	ppbv	< 0.100	Styrene	ppbv	< 0.100
Bromoform	ppbv	< 0.0500	1,1,2,2-Tetrachloroethane	ppbv	< 0.0750	1,3,5-Trimethylbenzene	ppbv	< 0.0750
1,2,4-Trimethylbenzene	ppbv	< 0.0750	Benzyl chloride	ppbv	< 0.125	p-Ethyltoluene	ppbv	< 0.100
1,3-Dichlorobenzene	ppbv	< 0.0750	1,4-Dichlorobenzene	ppbv	< 0.0750	1,2-Dichlorobenzene	ppbv	< 0.100
1,2,4-Trichlorobenzene	ppbv	< 0.0750	Hexachlorobutadiene	ppbv	< 0.250	Naphthalene	ppbv	< 0.0250
2-Hexanone	ppbv	< 0.250	4-Methyl-2-pentanone	ppbv	< 0.250	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	< 0.100
Heptane	ppbv	< 0.100						

ADDRESS
Fremont Analytical, Inc.
3600 Fremont Ave N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178
Website: www.fremontanalytical.com

Certificate of Analysis

Batch ID: 472 **Start Date:** 3/6/2020 10:04:43 AM
Comment:

Cleaning Batch Members:

Canister ID	Lot# / Serial#	Canister Type	Volume (Liters)
12671	12671	Summa w/FR	6
12673	12673	Summa w/FR	6
15422	15422	Summa w/FR	6
15894	15894	Summa w/FR	6
17237	17237	Summa w/FR	6
17242	17242	Summa w/FR	6
17637	17637	Summa w/FR	6
34754	6L Silonite Canister w/NUPRO	Silonite Canister w/NUPRO	6

Canisters from batch cleaning verification results:

Canister ID: 34754 **Test Code:** A-TO15-VOC **SeqNo:** 1154631
Expiration Date: **Method No:** EPA-TO-15 **Analysis Date:** 3/5/2020 11:20:22 PM

Analyte	Unit	Result	Analyte	Unit	Result	Analyte	Unit	Result
4-Bromofluorobenzene	%REC	0.810	Propylene	ppbv	< 0.100	Dichlorodifluoromethane	ppbv	< 0.100
Chloromethane	ppbv	< 0.125	Dichlorotetrafluoroethane	ppbv	< 0.100	Vinyl chloride	ppbv	< 0.0268
1,3-Butadiene	ppbv	< 0.125	Bromomethane	ppbv	< 0.125	Trichlorofluoromethane	ppbv	< 0.100
Chloroethane	ppbv	< 0.100	Acrolein	ppbv	< 0.125	1,1-Dichloroethene	ppbv	< 0.100
Acetone	ppbv	< 0.250	2-Propanol	ppbv	< 0.250	Methylene chloride	ppbv	< 0.500
Carbon disulfide	ppbv	< 0.375	trans-1,2-Dichloroethene	ppbv	< 0.0500	tert-Butyl Methyl Ether	ppbv	< 0.100
n-Hexane	ppbv	< 0.100	1,1-Dichloroethane	ppbv	< 0.0500	Vinyl acetate	ppbv	< 0.250
cis-1,2-Dichloroethene	ppbv	< 0.0500	2-Butanone	ppbv	< 0.250	Ethyl acetate	ppbv	< 0.250
Chloroform	ppbv	< 0.0500	Tetrahydrofuran	ppbv	< 0.100	1,1,1-Trichloroethane	ppbv	< 0.100
Carbon tetrachloride	ppbv	< 0.0164	1,2-Dichloroethane	ppbv	< 0.0500	Benzene	ppbv	< 0.0224
Cyclohexane	ppbv	< 0.100	Trichloroethene	ppbv	< 0.0162	1,2-Dichloropropane	ppbv	< 0.125
Methyl methacrylate	ppbv	< 0.100	Bromodichloromethane	ppbv	< 0.0750	1,4-Dioxane	ppbv	< 0.100
cis-1,3-dichloropropene	ppbv	< 0.100	Toluene	ppbv	< 0.100	trans-1,3-dichloropropene	ppbv	< 0.125
1,1,2-Trichloroethane	ppbv	< 0.125	Tetrachloroethene	ppbv	< 0.0500	Chlorodibromomethane	ppbv	< 0.125
1,2-Dibromoethane	ppbv	< 0.0500	Chlorobenzene	ppbv	< 0.0500	Ethylbenzene	ppbv	< 0.100
m,p-Xylene	ppbv	< 0.200	o-Xylene	ppbv	< 0.100	Styrene	ppbv	< 0.100
Bromoform	ppbv	< 0.0500	1,1,2,2-Tetrachloroethane	ppbv	< 0.0750	1,3,5-Trimethylbenzene	ppbv	< 0.0750
1,2,4-Trimethylbenzene	ppbv	< 0.0750	Benzyl chloride	ppbv	< 0.125	p-Ethyltoluene	ppbv	< 0.100
1,3-Dichlorobenzene	ppbv	< 0.0750	1,4-Dichlorobenzene	ppbv	< 0.0750	1,2-Dichlorobenzene	ppbv	< 0.100
1,2,4-Trichlorobenzene	ppbv	< 0.0750	Hexachlorobutadiene	ppbv	< 0.250	Naphthalene	ppbv	< 0.0250
2-Hexanone	ppbv	< 0.250	4-Methyl-2-pentanone	ppbv	< 0.250	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	< 0.100
Heptane	ppbv	< 0.100						

Sincerely,

Mike Ridgeway
President

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 3/11/2020 Page: 1 of: 2

Laboratory Project No (Internal): 2003205

Project Name: ~~USM~~ and UMC

Special Remarks:

Client: Hart Crowser

Project No: 19365.01

Address:

Location: Woodinville

City, State, Zip:

Collected by: A. Nakahara + M. Goodman

Telephone:

Reports to (PM): M. Goodman

Air samples are disposed of one week after report is submitted to client unless otherwise requested. [X] OK to Dispose [ ] Hold (fees may apply)

Fax:

Email (PM): maria.g.goodman@hartcrowser.com

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C	Comments	Internal: Final Pressure ("Hg)
1	UA-1	17637 Canister	3/11/20 Date	AA	6L	8 Hr	10mtorr Pressure	30 Pressure	11 Pressure		X	~~X~~ MG							Include chromatograms in final report	-10
		FR8-15 Flow Reg	1942 Time				3/6/2020 Date	3/11/20 Date	3/11/20 Date											
2	SV-1	12673 Canister	3/11/20 Date	S	6L	8 Hr	10mtorr Pressure	30.5 Pressure	7.5 Pressure	X		~~X~~ MG					X			-6
		FR8-16 Flow Reg	2000 Time				3/6/2020 Date	3/11/20 Date	3/11/20 Date											
3	SV-2	17242 Canister	3/11/20 Date	S	6L	8 Hr	10mtorr Pressure	30 Pressure	7 Pressure	X		~~X~~ MG					X			-6
		FV-5 Flow Reg	1910 Time				3/6/2020 Date	3/11/20 Date	3/11/20 Date											
4	IA-3	15422 Canister	3/11/20 Date	IA	6L	8 Hr	10mtorr Pressure	30 Pressure	8 Pressure		~~X~~	~~X~~ MG								-8
		FR8-14 Flow Reg	1948 Time				3/6/2020 Date	3/11/20 Date	3/11/20 Date		X									
5	IA-2	17237 Canister	3/11/20 Date	IA	6L	8 Hr	10mtorr Pressure	30.5 Pressure	9 Pressure		X	~~X~~ MG								-6
		FR8-28 Flow Reg	1909 Time				3/6/2020 Date	3/11/20 Date	3/11/20 Date											

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished x [signature] Date/Time 3/12/20 1000

Relinquished x Date/Time

Received x [signature] Date/Time 3/12/20 1:00pm

Received x Date/Time

Turn-Around Time:
- [X] Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] Next Day
- Same Day ____ (specify)

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 3/11/20 Page: 2 of: 2

Laboratory Project No (Internal): 2003205

Project Name: UM

Project No: 19365-01

Location: Woodinville, WA

Collected by: MG + AN

Reports to (PM): Marissa Goodman

Special Remarks:

Air samples are disposed of one week after report is submitted to client unless otherwise requested. [X] OK to Dispose [ ] Hold (fees may apply)

Client: Hart Crowser

Address:

City, State, Zip:

Telephone:

Fax:

Email (PM):

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1	SV-3	34754 Canister / FR8-33 Flow Reg	3/11/20 Date / 1849 Time	S	6L	8 Hr	10mtorr Pressure / 3/6/2020 Date	30 Pressure / 3/11/20 Date	6 Pressure / 3/11/20 Date	X		X MG					X			include chromatograms in final report ↓	-4
2	IA-1	15894 Canister / FR8-02 Flow Reg	3/11/20 Date / 1927 Time	IA	6L	8 Hr	10mtorr Pressure / 3/6/2020 Date	30 Pressure / 3/11/20 Date	6 Pressure / 3/11/20 Date		X										-6
3		12671 Canister / FR8-30 Flow Reg	Date / Time		6L	8 Hr	10mtorr Pressure / 3/6/2020 Date	Pressure / Date	Pressure / Date												-26
4		Canister / Flow Reg	Date / Time				Pressure / Date	Pressure / Date	Pressure / Date												
5		Canister / Flow Reg	Date / Time				Pressure / Date	Pressure / Date	Pressure / Date												

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished: x Marissa Goodman Date/Time: 3/12/20/1000

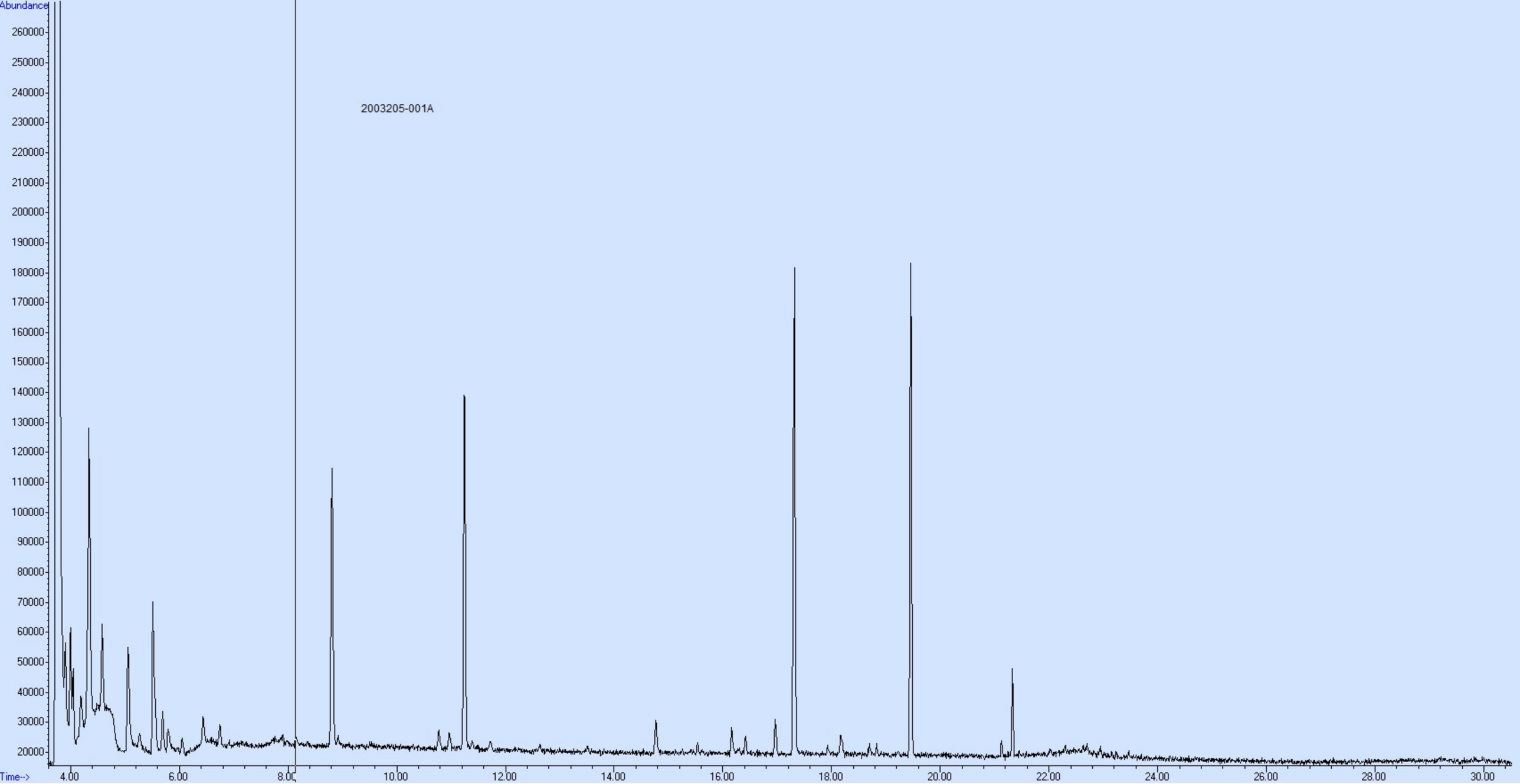
Relinquished: x Date/Time:

Received: x Date/Time: 3/12/20 1:00pm

Received: x Date/Time:

Turn-Around Time:
- [X] Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] Next Day
- Same Day ____ (specify)

2003205 –
VOC CHROMATOGRAMS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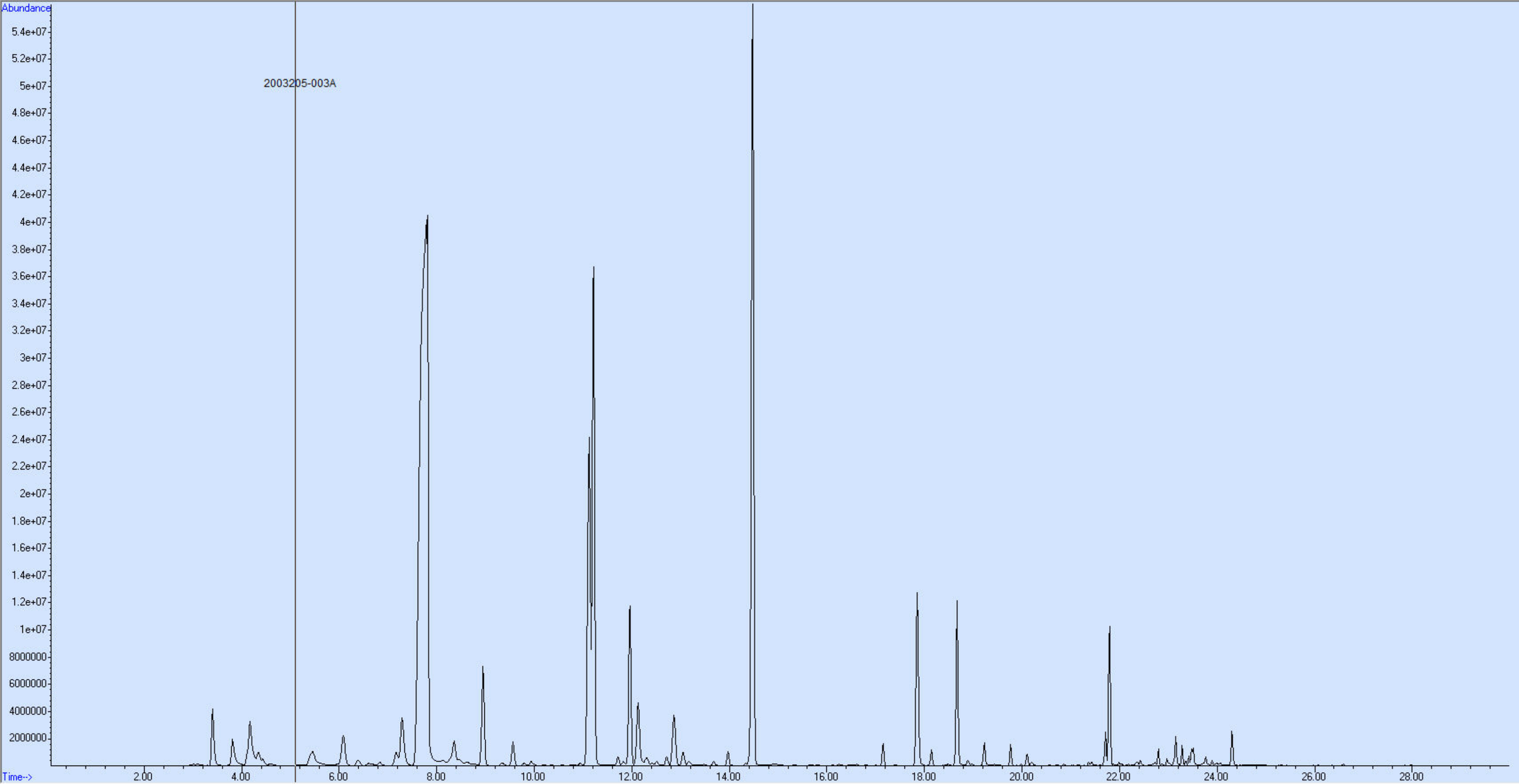
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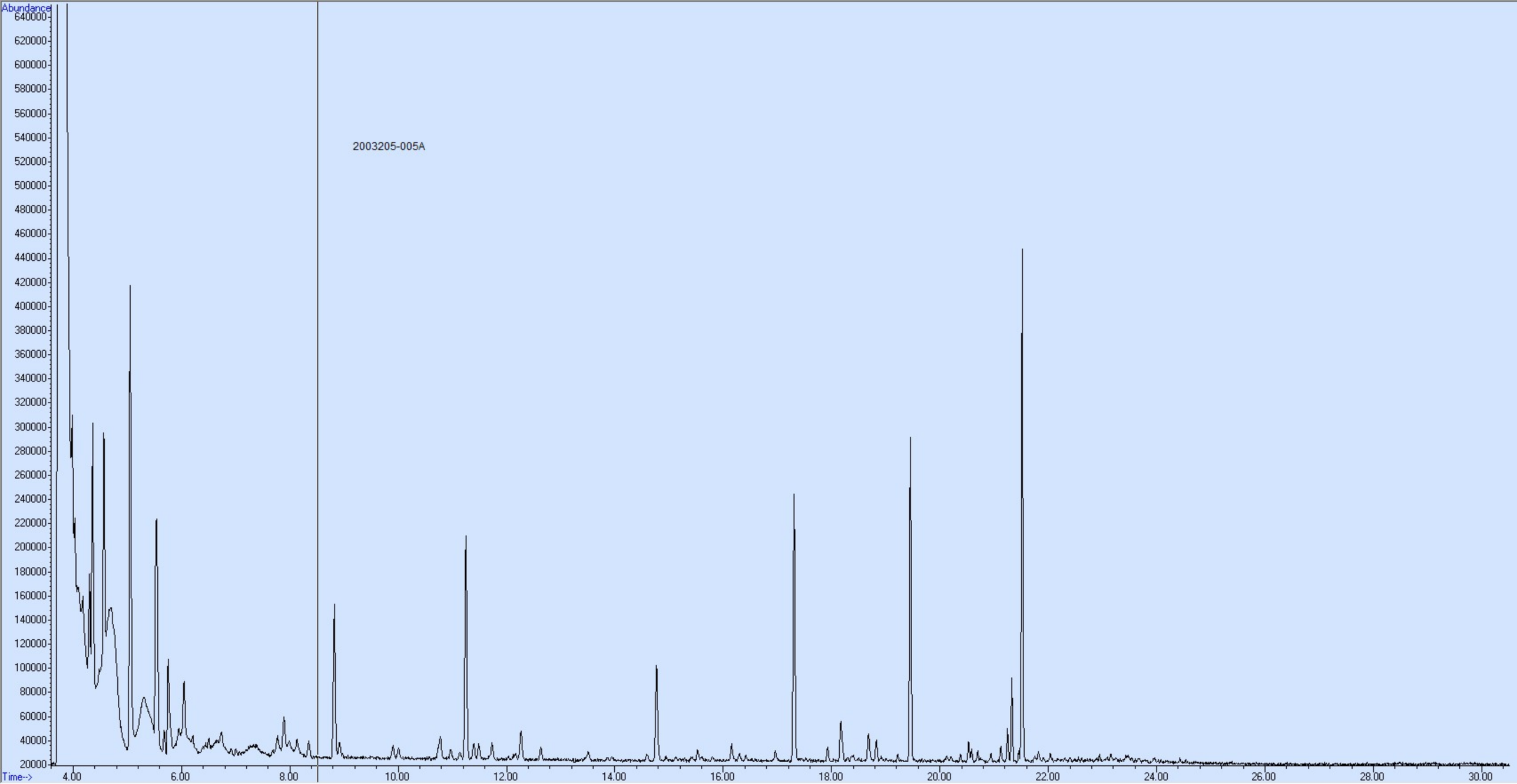
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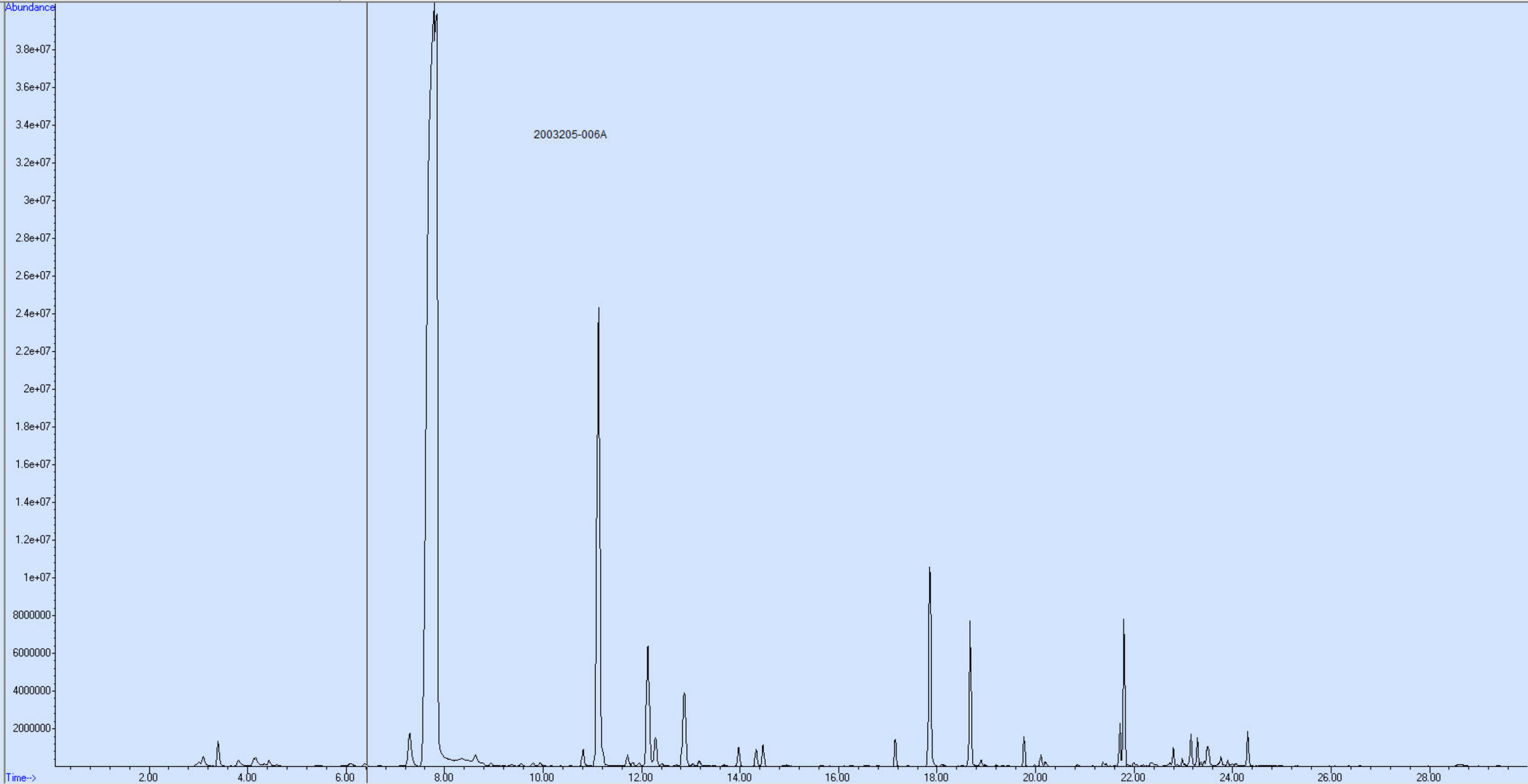
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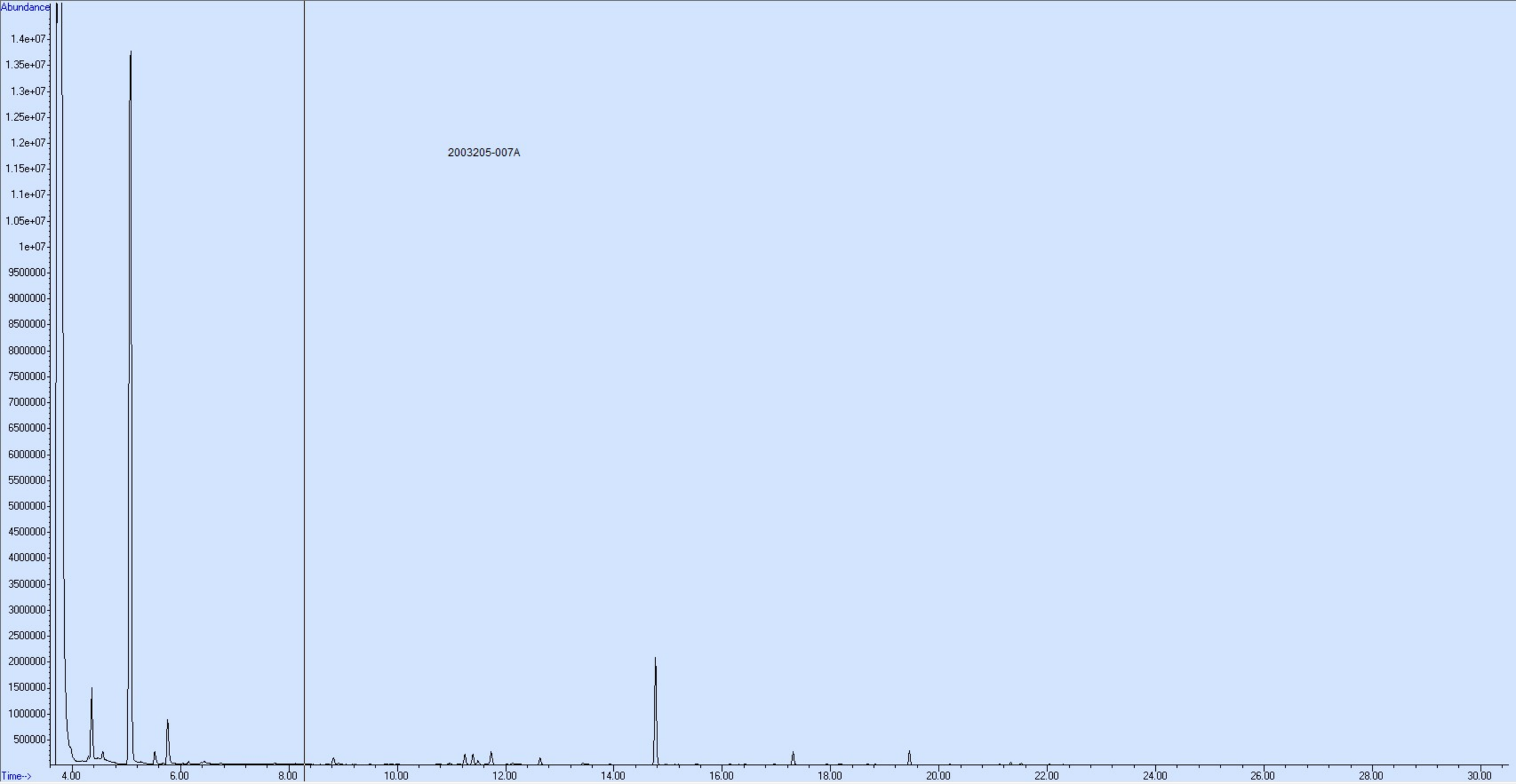
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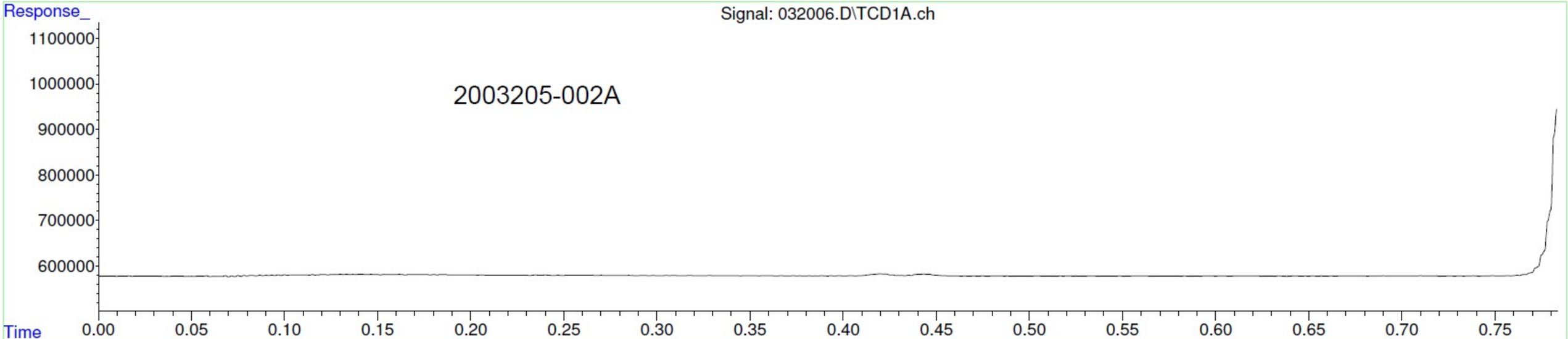
2003205 –
HELIUM CHROMATOGRAMS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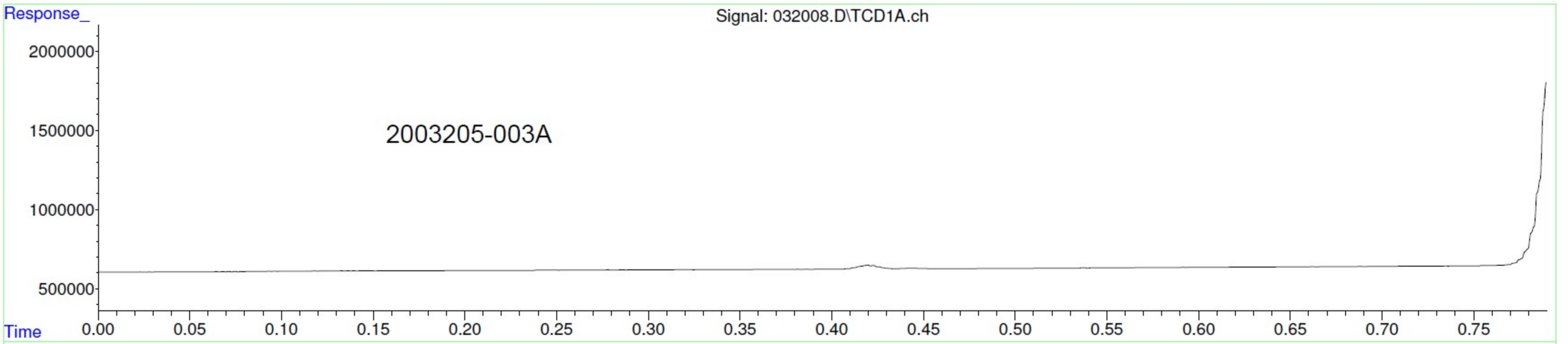
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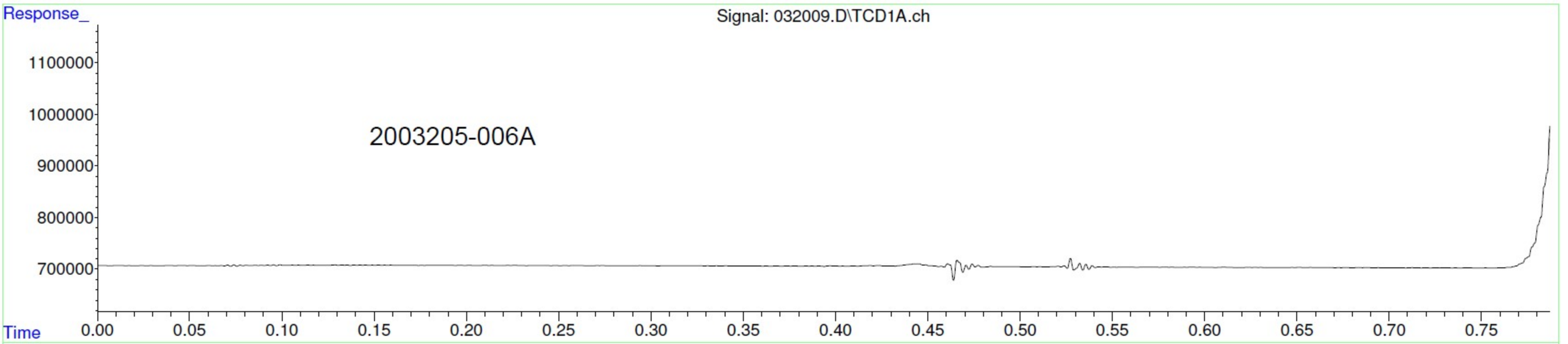
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