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March 26, 2021
File No. 20.0153134.30

Mr. Randal Goddard
146 Larabee Street
Horicon, Wisconsin 53032

Re: Post-Mitigation January and February 2021 Indoor Air and Cabinet Air Test Results

Dear Mr. Goddard:

With this letter, GZA GeoEnvironmental, Inc. (GZA) follows up on our February 2, 2021 and February 26, 2021 telephone conversations regarding the indoor air sampling at 146 Larabee Street in Horicon, Wisconsin between January 18 and 19, 2021 and on February 23, 2021.

As set forth below, that sampling did not show evidence of trichloroethylene (TCE) originating from vapors beneath the basement of your home, which is where TCE would be expected to be found if TCE vapors were entering from an underground source. TCE was detected in the first and second floor levels and traced specifically to a storage cabinet on the second floor that previously contained cleaning agents that off-gas TCE. Outside of that cabinet, the concentrations measured in the first and second floors were detected, but below the Wisconsin Department of Natural Resources' (WDNR's) applicable adverse carcinogenic effect threshold of 0.89 parts per billion by volume (ppbv). The applicability of the carcinogenic effect threshold for your home is described in the discussion section below.

INDOOR AIR SAMPLING

Because of the extensive past efforts taken to assess and update the sub-slab depressurization system installed to address the vapor intrusion pathway and the pre- and post-mitigation sampling efforts, the January 24, 2020 summary report[1] documenting assessment and mitigation of the vapor intrusion pathway is provided in Attachment 1 for your convenience. In the January 24, 2020 report, we informed you that we would request your authorization to sample indoor air again in the winter of 2020/2021.

Three indoor air samples were collected from your home over a 24-hour period between January 18 and 19, 2021. Indoor air samples were collected from the basement, first floor, and second floor, and an outside air sample was collected for background. The four air samples were collected in 6-liter canisters and submitted to TestAmerica of Knoxville, Tennessee for analyses for four target chemicals, TCE, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and vinyl chloride, in accordance with United States Environmental Protection Agency (USEPA) Method TO-15. The analytical report for the January 2021 air samples is provided in Attachment 2. The data are summarized on the attached Table 1 along with historical sampling results for your home.

During our February 2, 2021 telephone conversation, GZA informed you that the TCE reported for the first and second floor samples exceeded the residential vapor action level (VAL) for TCE and that the TCE VAL was not exceeded in the basement sample and was not detected in the

[1] Only the pertinent portions of the report, consisting of the text and table, are attached.

outside air background sample. As had occurred in past indoor air sampling rounds, the highest TCE concentration was detected in the second-floor sample.

In 2019, GZA concluded that the storage and use of TCE-containing cleaning chemicals in the home were the primary sources of TCE previously detected inside of your home. Although you removed the specialty cleaning chemicals out of the home in late 2019 and have since stored the chemicals in the garage, you informed GZA during our February 2, 2021 telephone conversation that you occasionally use the specialty cleaning chemicals inside of the home, the last time being around Thanksgiving 2020, and that you store the cleaned equipment in a cabinet on the second floor of your home. Although you had removed the TCE-containing chemical from the second-floor cabinet more than one year ago, we discussed the possibility that many years of storage of the TCE-containing chemical in the cabinet may have resulted in TCE penetration into the porous portions of the wood cabinet and the contents in the cabinet. If TCE had penetrated porous portions of the cabinet and its contents, continued off-gassing of TCE into the home would be expected and could provide an explanation for the ongoing TCE indoor air VAL exceedance in your home and the consistent reporting of the highest TCE concentrations in the second-floor samples. Therefore, we requested your permission to obtain a grab sample from the second-floor storage cabinet, and you consented.

DISPLAY CABINET AIR SAMPLING

On February 23, 2021, two grab samples were collected from the large upper cabinet rack and small lower cabinet shell storage portions of the display cabinet on the second floor of the home where the TCE-containing chemical was formerly stored. Teflon-lined tubing was placed into the partially opened door of each portion of the cabinet with the door opening minimized to limit air from the home from entering the cabinet and diluting the sample. The cabinet air samples were collected in evacuated 6-liter canisters with a regulator set at a maximum 200 milliliters per minute canister fill rate. The samples were submitted under chain-of-custody to TestAmerica of Knoxville, Tennessee for analyses for the same four target chemicals as the indoor air samples in accordance with USEPA Method TO-15. The analytical report for the February 23, 2021 cabinet air samples is provided in Attachment 2. The data are summarized on the attached Table 1 along with historical sampling results for your home.

RESULTS

The 0.39 ppbv residential VAL for TCE was exceeded in the first and second floor samples with reported concentrations of 0.45 ppbv and 0.53 ppbv, respectively. With a concentration of 0.24 ppbv, the TCE VAL was not exceeded in the basement sample. TCE was not detected in the outside sample. Other analyzed chemicals were not detected.

TCE was detected at 0.98 ppbv in the large upper display portion of the cabinet and higher than the indoor air sample results from January 2021. TCE was detected at 19 ppbv in the small lower shell storage portion of the cabinet. Because an upper and lower door needed to remain open for the tube insertions during the sampling, the cabinet air was diluted to some degree with air from the home and the analytical results are likely biased low. This is particularly true for the small lower storage portion of the cabinet where significant dilution potential existed because the 6 liters of air sampled from the cabinet is a significant proportion of the ambient air volume in the cabinet.

DISCUSSION

With the elevated TCE concentrations detected in the lower portion of the cabinet, GZA believes that the source of indoor air TCE originates with air from the cabinet. A source on the second floor of your home is consistent with the highest indoor air TCE concentration being detected in the second-floor sample in eight out of the eight post-mitigation indoor air sampling rounds in which a sample was collected from the second floor. Prior to installation of the sub-slab depressurization system in your home, the highest TCE concentration was detected in the basement.

GZA informed you that the concentration at which the TCE VAL is set is based on the potential that TCE could affect fetal heart development. You stated that there will be no pregnant women in your home. GZA also informed you that, absent

the potential for affecting fetal development, the WDNR uses a concentration at 0.89 ppbv as a threshold for adverse carcinogenic affects due to TCE. The TCE concentrations obtained for the January 2021 indoor air sampling round were less than 0.89 ppbv. As we have discussed, GZA recommended you eliminate the use and storage of the TCE-containing cleaning chemical in your home. You stated that you plan to replace the TCE-containing chemical with a non-TCE alternative and remove impacted porous materials from the lower storage portion of the cabinet.

If you are looking for more information, please contact the undersigned (262-424-2045 or bernard.fenelon@gza.com). You may also contact Mr. Jeff Ackerman of the WDNR (608-275-3323 or Jeffrey.Ackerman@wisconsin.gov) if you have any questions related to the investigation, or Mr. Curtis Hedman of the Wisconsin Department of Health Services ([WDHS] at 608-266-6677 or Curtis.Hedman@dhs.wisconsin.gov) if you have any health-related questions associated with this investigation.

Very truly yours,

GZA GeoEnvironmental, Inc.

Bernard G. Fenelon, P.G.
Senior Consultant/Hydrogeologist

John C. Osborne, P.G.
Senior Principal/Hydrogeologist

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2021 03 26 FINAL Post-Mitigation Indoor Air Sampling 146 Larabee - Goddard.docx

Attachments

c: Mr. Jeff Ackerman, WDNR
Mr. Curtis Hedman, WDHS

TABLE

TABLE 1
INDOOR, SUB-SLAB, SEWER, AND CABINET AIR ANALYTICAL RESULTS SUMMARY
146 Larabee Street
Horicon, Wisconsin

	Wisconsin Department of Natural Resources Vapor Action Levels									
	Chloro-ethane	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2,2-TCA	PCE	TCE	1,1,2-TCA	Vinyl Chloride
Sub-Slab Vapor Action Level (ppbv)	**12,000**	**9**	**1,700**	**NE**	**NE**	**2.3**	**210**	**13**	**1.3**	**22**
Indoor Air Action Level (ppbv)	**370**	**0.27**	**52**	**NE**	**NE**	**0.068**	**6.2**	**0.39**	**0.038**	**0.65**

Sample Location	Date	SUB-SLAB AND SEWER VAPOR SAMPLE RESULTS									
		Chloro-ethane	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2,2-TCA	PCE	TCE	1,1,2-TCA	Vinyl Chloride
146 Larabee Street	4/27/11	<100	<100	<100	<100	<100	<100	<100	**709**	<100	<100
146 Larabee Street SE-SS	2/8/19	NA	NA	NA	**2.3**	<0.50	NA	NA	**12**	NA	<0.71
146 Larabee Street SW-SS	2/8/19	NA	NA	NA	<0.60	<0.50	NA	NA	<0.36	NA	<0.71
146 Larabee Street NW-SS	2/8/19	NA	NA	NA	<0.60	<0.50	NA	NA	<0.36	NA	<0.71
146 Larabee Street NE-SS	2/8/19	NA	NA	NA	**32**	<0.50	NA	NA	**130**	NA	<0.71
146 Larabee Street Effluent	2/8/19	NA	NA	NA	<0.60	<0.50	NA	NA	**3.9**	NA	<0.71
146 Larabee St Basement Cleanout	5/31/19	NA	NA	NA	<0.25	<0.16	NA	NA	**0.20 J**	NA	<0.66
146 Larabee St 2nd Floor Bathroom Toilet	5/31/19	NA	NA	NA	<0.25	<0.16	NA	NA	**0.26 J**	NA	<0.66
146 Larabee St 1st Floor Bathroom Toilet	5/31/19	NA	NA	NA	<0.25	<0.16	NA	NA	**0.21 J**	NA	<0.66
		INDOOR AIR SAMPLING RESULTS									
		Pre-Mitigation Indoor Air Sample Results									
146 Larabee Street - Basement	8/16/11	<0.085	**1.21**	<0.085	<0.085	<0.085	<0.085	<0.085	**0.49**	<0.085	<0.085
146 Larabee Street - 1st Floor	8/16/11	<0.085	**2.61**	<0.085	<0.085	<0.085	<0.085	<0.085	**0.303**	<0.085	<0.085
146 Larabee - 2nd Floor	8/16/11	<0.085	**1.36**	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085
		Post-Mitigation Indoor Air Sample Results									
146 Larabee St-IA-Basement	10/17/12	NA	NA	NA	NA	NA	NA	NA	<0.17	NA	NA
146 Larabee St-IA-Grade	10/17/12	NA	NA	NA	NA	NA	NA	NA	<0.18	NA	NA
146 Larabee St-IA-Upper (2nd Floor)	10/17/12	NA	NA	NA	NA	NA	NA	NA	**0.21**	NA	NA
146 Larabee St-IA-Background	10/17/12	NA	NA	NA	NA	NA	NA	NA	<0.18	NA	NA
146 Larabee St-Basement IA	12/13/18	NA	NA	NA	**0.18 J**	<0.050	NA	<0.040	**0.70**	NA	<0.071
146 Larabee St-1st Floor IA	12/13/18	NA	NA	NA	**0.12 J**	<0.050	NA	<0.040	**1.1**	NA	<0.071
146 Larabee St-Background IA (Outside)	12/13/18	NA	NA	NA	<0.060	<0.050	NA	<0.040	<0.036	NA	<0.071
146 Larabee St-Basement IA	1/16/19	NA	NA	NA	<0.060	<0.050	NA	<0.040	**0.28**	NA	<0.071
146 Larabee St-1st Floor IA	1/16/19	NA	NA	NA	<0.060	<0.050	NA	<0.040	**0.50**	NA	<0.071
146 Larabee St-Background IA (Outside)	1/16/19	NA	NA	NA	<0.060	<0.050	NA	<0.040	<0.036	NA	<0.071
146 Larabee St-Basement IA	2/8/19	NA	NA	NA	**0.11 J**	<0.050	NA	NA	**0.39**	NA	<0.071
146 Larabee St-1st Floor IA	2/8/19	NA	NA	NA	**0.094 J**	<0.050	NA	NA	**0.59**	NA	<0.071
146 Larabee St-2nd Floor IA	2/8/19	NA	NA	NA	**0.10 J**	<0.050	NA	NA	**0.65**	NA	<0.071
146 Larabee St-Attic IA	2/8/19	NA	NA	NA	**0.10 J**	<0.050	NA	NA	**0.51**	NA	<0.071
146 Larabee St-Background IA (Outside)	2/8/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071

TABLE 1
INDOOR, SUB-SLAB, SEWER, AND CABINET AIR ANALYTICAL RESULTS SUMMARY
146 Larabee Street
Horicon, Wisconsin

	Wisconsin Department of Natural Resources Vapor Action Levels									
	Chloro-ethane	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2,2-TCA	PCE	TCE	1,1,2-TCA	Vinyl Chloride
Sub-Slab Vapor Action Level (ppbv)	**12,000**	**9**	**1,700**	**NE**	**NE**	**2.3**	**210**	**13**	**1.3**	**22**
Indoor Air Action Level (ppbv)	**370**	**0.27**	**52**	**NE**	**NE**	**0.068**	**6.2**	**0.39**	**0.038**	**0.65**
	2/27/19	**Mitigation System Upgrade to Include Separate Fans for East and West Systems - February 27, 2019**								
146 Larabee St-Basement IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.20**	NA	<0.041
146 Larabee St-1st Floor IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.37**	NA	<0.041
146 Larabee St-2nd Floor IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.49**	NA	<0.041
146 Larabee St-Attic IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.042 J**	NA	<0.041
146 Larabee St-Background IA (Outside)	3/19/19	NA	NA	NA	**0.22**	<0.074	NA	NA	**0.10 J**	NA	<0.041
	4/12/19	**Mitigation System Upgrade to an Additional Suction Location in the Northeast Quadrant of Home - April 12, 2019**								
146 Larabee St-Basement IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.16 J**	NA	<0.071
146 Larabee St-1st Floor IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.34**	NA	<0.071
146 Larabee St-2nd Floor IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.64**	NA	<0.071
146 Larabee St-Attic IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.27**	NA	<0.071
146 Larabee St-Background IA (Outside)	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071
146 Larabee St-Basement Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.42**	NA	<0.066
146 Larabee St-Basement IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.27**	NA	<0.066
146 Larabee St-1st Fl Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.44**	NA	<0.066
146 Larabee St-1st Fl IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.37**	NA	<0.066
146 Larabee St-2nd Fl East Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.64**	NA	<0.066
146 Larabee St-2nd Fl West Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.89**	NA	<0.066
146 Larabee St-2nd Floor IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**1.0**	NA	<0.066
146 Larabee St-Attic IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.70**	NA	<0.066
146 Larabee St-Background IA (Outside)	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.21**	NA	<0.066
	8/19-23/19	**Mitigation System Shut Off Temporarily 3 Days Prior to Sampling**								
146 Larabee St-Basement IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.26**	NA	<0.071
146 Larabee St-1st Fl IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.050 J**	NA	<0.071
146 Larabee St-2nd Floor IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.26**	NA	<0.071
146 Larabee St-Attic IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.20**	NA	<0.071
146 Larabee St-Background IA (Outside)	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071

TABLE 1
INDOOR, SUB-SLAB, SEWER, AND CABINET AIR ANALYTICAL RESULTS SUMMARY
146 Larabee Street
Horicon, Wisconsin

		Wisconsin Department of Natural Resources Vapor Action Levels									
		Chloro-ethane	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2,2-TCA	PCE	TCE	1,1,2-TCA	Vinyl Chloride
Sub-Slab Vapor Action Level (ppbv)		**12,000**	**9**	**1,700**	**NE**	**NE**	**2.3**	**210**	**13**	**1.3**	**22**
Indoor Air Action Level (ppbv)		**370**	**0.27**	**52**	**NE**	**NE**	**0.068**	**6.2**	**0.39**	**0.038**	**0.65**
	9/26/19	**In Response to GZA Questioning, Owner Acknowledges that Specialty Cleaning Chemicals are Stored in a Cabinet on the Second Floor of the Home**									
	10/9/19	**Owner Provides GZA Specialty Cleaning Chemicals Used and GZA Confirms One Product Contains TCE. Cleaning Products are Removed from the Home**									
146 Larabee St-Basement IA	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.11 J**	NA	<0.071
146 Larabee St-1st Fl IA	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.26**	NA	<0.071
146 Larabee St-2nd Floor IA	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.34**	NA	<0.071
146 Larabee St-Background IA (Outside)	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071
146 Larabee St-Basement IA	1/19/21	NA	NA	NA	<0.030	<0.027	NA	NA	**0.24**	NA	<0.066
146 Larabee St-1st Fl IA	1/19/21	NA	NA	NA	<0.030	<0.027	NA	NA	**0.45**	NA	<0.066
146 Larabee St-2nd Floor IA	1/19/21	NA	NA	NA	<0.030	<0.027	NA	NA	**0.53**	NA	<0.066
146 Larabee St-Background IA (Outside)	1/19/21	NA	NA	NA	<0.030	<0.027	NA	NA	<0.030	NA	<0.066
Main Cabinet Compartment	2/23/21	NA	NA	NA	<0.060	<0.050	NA	NA	**0.98**	NA	<0.071
Lower Small Storage Compartment	2/23/21	NA	NA	NA	<0.060	<0.050	NA	NA	**19**	NA	<0.071

Notes:
1. Sample results from 2011 are for sub-slab and indoor air samples collected by SCS BT Squared of Madison, Wisconsin and analyzed by the Wisconsin State Hygiene Laboratory of Madison, WI for VOCs in accordance with USEPA Method TO-15. Results are reported to the Limit of Detection (LOD).
2. Sample results from after 2011 are indoor air samples collected by GZA GeoEnvironmental, Inc. of Waukesha, WI and analyzed by Eurofins Air Toxics, Inc. of Folsom, CA or TestAmerica of Knoxville, TN for the listed VOCs in accordance with USEPA Method TO-15. Results are reported to the Reporting Limit (RL), Limit of Quantification (LOQ) or Method Detection Limit (MDL).
4. Analytical results are provided in units of parts per billion by volume (ppbv).
5. "J" denotes an estimated concentration between the method detection limit and the reporting limit. "NA" denotes the sample was not analyzed for the constituent.
6. The sub-slab and indoor air vapor action levels (VALs) were obtained from USEPA regional screening levels accessed at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm and using a 10-5 cancer risk and a hazard index of 1 with a 0.1 attenuation factor for the building slab.
7. Samples that exceed the applicable sub-slab or indoor VAL are provided in **bold/underlined** font.
8. Constituent abbreviations are used as follows: 1,2-DCA denotes 1,2-dichloroethane; cis-1,2-DCE denotes cis-1,2-dichloroethene; 1,1,2,2 TCA denotes 1,1,2,2-Tetrachloroethane; TCE denotes trichloroethene; 1,1-DCE denotes 1,1-dichloroethene; trans-1,2-DCE denotes trans-1,2-dichloroethene; PCE denotes tetrachloroethene; 1,1,2-TCE denotes 1,1,2-Trichloroethane

ATTACHMENT 1

January 24, 2020 Summary Report of Prior Vapor Intrusion Pathway Mitigation Efforts and Sampling (Without the Laboratory Reports)

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January 24, 2020
File No. 20.0153134.30

Mr. Randal Goddard
146 Larabee Street
Horicon, Wisconsin 53032

Re: Post-Mitigation Indoor Air Test Results and Trichloroethene Source Assessment

Dear Mr. Randal Goddard:

With this letter, GZA GeoEnvironmental, Inc. (GZA) is following up on recent telephone conversations we had informing you of the results of recent indoor air sampling conducted at your home at 146 Larabee Street in Horicon, Wisconsin. Thank you for your help in identifying specialty chemicals containing trichloroethene (TCE) stored in your home. With those chemicals moved out of the house and into the garage, the most recent indoor air results demonstrate that indoor air complies with the TCE residential vapor action level (VAL).

BACKGROUND

As we explained in prior correspondence, Gardner Manufacturing Company, Inc. (Gardner) hired GZA to conduct environmental investigation and remediation of its former property at 263 Kansas Street, including the assessment of chemical vapors near area homes. The Wisconsin Department of Natural Resources (WDNR) provides oversight of the investigation activities being conducted by Gardner and provides online file information under BRRTS No. 02-14-55423.

Due to the detection of TCE in an indoor air sample collected in August 2011 at a concentration greater than the TCE VAL, the WDNR arranged to have a mitigation system installed in your home with your permission in March 2012. Post-mitigation indoor air samples collected by GZA in October 2012 confirmed that the mitigation system was effective in reducing TCE concentrations to less than the TCE residential VAL.

INDOOR AIR SAMPLING AND RESULTS

To further verify the effectiveness of the mitigation system, two indoor air samples were collected from your home over a 24-hour period between December 13 and 14, 2018. Samples were collected from the basement and first floor and from background outside air. The three air samples were collected in 6-liter canisters and were submitted to TestAmerica of Knoxville, Tennessee for testing. The analytical reports for the December 2018 air samples and for subsequent air samples, as described below, are provided as Attachment 1. The data are summarized on the attached Table 1 which includes historical sampling results and subsequent sampling results, as discussed below.

TCE was detected at a concentration exceeding the residential VAL of 0.39 parts per billion by volume (ppbv) in both the basement and first floor samples. The basement sample concentration (0.70 ppbv) was greater than the pre-mitigation concentration (0.49 ppbv) and the first-floor sample TCE concentration (1.1 ppbv) was approximately 60% higher than the

basement sample. TCE was not detected in the outdoor background sample. GZA previously provided you these results with recommended follow-up activities in a January 9, 2019 letter.

Because TCE was detected in the indoor air samples at concentrations greater than the TCE residential VAL and greater than the pre-mitigation basement air concentration from August 16, 2011, additional vapor intrusion evaluation, vapor mitigation system upgrades, and indoor air, sewer air and sub-slab sampling were conducted as summarized chronologically in the paragraphs below.

January 11, 2019 - GZA inspected the mitigation system and confirmed that manometers were reading similar vacuums to those recorded when the system was installed, and air was flowing in the effluent pipe. GZA installed four sub-slab vapor probes and verified that the floor slab was depressurized. Sub-slab pressure readings indicated slightly greater vacuums than those obtained when the mitigation system was installed. The sub-slab pressure readings were -0.111 and -0.075 inches of water column (in. w.c.) in the two vapor probes in the west half of the basement, -0.076 in. w.c. in the northeast vapor probe, and -0.003 in the southeast vapor probe.

January 15-16, 2019 - GZA re-sampled indoor air from the first floor and basement for comparison to the December 2019 indoor air results. The TCE concentration for the first-floor sample (0.50 ppbv) still exceeded the residential VAL, but the basement TCE concentration (0.28 ppbv) was less than the VAL. TCE was not detected in the outdoor background sample during the January 2019 sampling round. GZA called you to discuss the results and recommended next steps.

February 6, 2019 - GZA inspected the mitigation system with a certified mitigation contractor who said to consider using separate fans for the western and eastern basement floor suction points because the eastern point was in the original home and the western point was in an expansion with an apparently more permeable subgrade as described below. An elbow was removed from the top of the effluent pipe to obtain better dispersion of the effluent.

February 7-8, 2019 - GZA sampled indoor air and included samples from the second floor and attic to evaluate the potential for return of TCE from effluent pipe back into the home. The residential VAL for TCE was exceeded in the first (0.59 ppbv), second floor (0.65 ppbv), and attic (0.51 ppbv) samples with the highest concentration on the second floor. The basement sample (0.39 ppbv) was equal to the VAL. TCE was not detected in the outdoor background sample during the February 2019 sampling round. GZA called you to discuss the results and recommended next steps.

February 8, 2019 - GZA sampled the four basement sub-slab sample probes and system effluent. TCE was not detected in the two sub-slab probes on the west side of the home, but was detected at concentrations of 12 ppbv and 130 ppbv in the southeast and northeast vapor probes, respectively. TCE was detected at a concentration of 3.9 ppbv in the mitigation system effluent.

February 27, 2019 - The mitigation system was modified to have separate fans for the suction locations in the eastern and western portions of the home. The initial mitigation system was constructed with one fan drawing from both suction locations. The vacuum measured by the manometer on the western suction location was approximately 0.5 in. w.c., and the vacuum measured by the manometer on the eastern suction location was approximately 2.5 in. w.c. The difference was likely due to more permeable soil beneath the western portion of the home, which was a later addition to the original home. Because most of the air draw was likely coming from the western portion of the home with the system configured with a single fan and because sub-slab TCE was not detected beneath the western portion of the home based on the February 8, 2019 sub-slab sample results, the mitigation system was modified to have separate fans for the western and eastern suction locations with a resulting greater air draw from beneath the eastern portion of the home.

March 18-19, 2019 - GZA sampled indoor air from the basement, first and second floors, and attic to evaluate post-system modification indoor air quality. Although the TCE indoor air concentrations were lower, the residential VAL for TCE was exceeded in the second-floor sample (0.49 ppbv), but not the first floor sample (0.37 ppbv), the basement sample (0.20 ppbv), or the attic sample (0.042 J ppbv). TCE was also detected in the outdoor background sample (0.10 J ppbv) during the March 2019 sampling round. GZA called you to discuss the results and recommended next steps.

April 12, 2019 - The mitigation system was upgraded to include an additional suction location in the northeast quadrant of the home where the highest sub-slab TCE concentration was detected in the February 8, 2019 sample.

April 24-25, 2019 - GZA sampled indoor air from the basement, first and second floors, and attic to evaluate indoor air quality after the second system modification. The residential VAL for TCE was exceeded in the second-floor sample (0.64 ppbv), but not the first floor sample (0.34 ppbv), the basement sample (0.16 J ppbv), or the attic sample (0.27 ppbv). TCE was not detected in the outdoor background sample during the April 2019 sampling round. GZA called you to discuss the results and recommended next steps.

May 30-31, 2019 - Due to the potential that TCE was entering the home through the sanitary sewer system, GZA re-sampled indoor air from each floor of the home and from the bathrooms in the basement and first and second floors. The bathroom doors were kept closed during the sampling to minimize mixing with air inside the home. GZA also collected samples from three locations in the sanitary sewer system in the home: 1) from the cleanout at entry into the home; 2) from behind a trap in a first floor toilet; and 3) from behind a trap in a second floor toilet. The residential VAL for TCE was exceeded in samples from the basement and each of the three floors in the home, but the concentrations were not preferentially higher in the bathrooms. The TCE concentrations in the sanitary sewer samples (0.20 J ppbv to 0.26 J ppbv) were less than the residential indoor air VAL and similar to the outside air background sample (0.21 ppbv). The highest TCE concentration was detected on the second floor, consistent with all other sampling rounds conducted after 2011 in which a sample was collected from the second floor. GZA called you to discuss the results and recommended next steps.

August 19-23, 2019 - Although return of mitigation system effluent back into the home seemed very unlikely based on the number of times indoor air exceeded the TCE residential VAL and based on lower attic indoor air TCE concentrations than second floor TCE concentrations, GZA asked you to temporarily shut off the mitigation system three days prior to another planned sampling round to evaluate the potential for effluent return into the home.

August 22-23, 2019 - GZA sampled indoor air from the basement, first and second floors, and attic to evaluate indoor air quality without the mitigation system operating. Although the residential VAL for TCE was not exceeded in indoor air samples, TCE reported for the second-floor sample (0.26 ppbv) was still higher than the first floor (0.050 J ppbv) and attic (0.20 ppbv) samples and the same as the basement sample. Because of the warm and humid temperatures during the August 2019 indoor air sampling round, the windows in the home remained open over the sampling period.

September 26,2019 - After each indoor air sampling round, GZA asked you whether there were any solvents stored in the home. In each case, you informed GZA that solvents were not in the house, but were stored in an unattached garage. After the August 2019 indoor air sampling round, GZA called you and asked specifically if there were any specialty cleaning chemicals in the home. You informed us that specialty cleaning products were stored in a cabinet on the second floor of the home. Because you were out of Wisconsin when we called and did not know the specific names of the cleaning products, you informed GZA that you would provide us the information when you returned home.

October 9, 2019 - You sent GZA photographs of the labels of each of the specialty cleaning products, and GZA confirmed that one of the products used and stored in the cabinet contained TCE. Based on this information and the

prior indoor air and sewer air test results and the noted distribution of TCE on the various floors of the home, the cause of the prior TCE indoor air VAL exceedances in indoor air samples from the home was confirmed to be due to storage of a TCE-containing solvent on the second floor of the home. You then removed the cleaning products from the cabinet for storage in the garage.

December 19-20, 2019 - GZA re-sampled indoor air from the basement and first and second floors to evaluate indoor air quality after the specialty cleaning chemicals were removed from the home. Although TCE was detected on each floor, the concentrations were less than the residential TCE VAL. The second-floor sample (0.34 ppbv) continued to be higher than the first floor sample (0.26 ppbv) and the basement sample (0.11 J ppbv). The December 2019 indoor air sampling round is the first cold weather sampling round to result in TCE concentrations less than the residential VAL, after six colder weather sampling rounds conducted with the home closed up between December 2018 and May 2019 that resulted in at least one TCE indoor air concentration residential VAL exceedance.

CONCLUSION

The cause of the prior residential indoor air TCE VAL exceedances in the 146 Larabee Street home is believed to be from an indoor air source based on:

1. The detection of TCE at the highest concentration in second floor samples, each time a second-floor sample was collected or in the first-floor sample when a second-floor sample was not collected; and
2. The confirmed presence of a TCE-containing solvent stored in a cabinet on the second floor of the home when the indoor air VAL exceedances were detected.

As we discussed, you plan to keep the specialty cleaning chemicals out of the home and stored in the garage. You will need to keep the chemicals out of your home, as we will be requesting your authorization to re-sample indoor air in late fall/early winter of this year.

In the meantime, if you are looking for more information, please contact the undersigned (262-754-2560 or bernard.fenelon@gza.com). You may also contact Mr. Jeff Ackerman of the WDNR (608-275-3323 or Jeffrey.Ackerman@wisconsin.gov) if you have any questions related to the investigation, or Mr. Curtis Hedman of the Wisconsin Department of Health Services ([WDHS] at 608-266-6677 or Curtis.Hedman@dhs.wisconsin.gov) if you have any health-related questions associated with this investigation.

Very truly yours,

GZA GeoEnvironmental, Inc.

Bernard G. Fenelon, P.G.
Senior Consultant/Hydrogeologist

John C. Osborne, P.G.
Senior Principal/Hydrogeologist

J:\153100to153199\153134 263 Kansas\30 Remediation\Correspondence\2019-2020 IAQ Results Letters\2020 01 24 FINAL Results of Verification Post-Mitigation Indoor Air Sampling 146 Larabee - Goddard.docx

Attachments

c: Mr. Jeff Ackerman, WDNR
Mr. Curtis Hedman, WDHS

TABLE 1

Indoor Air, Sub-Slab Air, and Sewer Air Analytical Results Summary

TABLE 1
INDOOR AIR, SUB-SLAB AIR AND SEWER AIR ANALYTICAL RESULTS SUMMARY
146 Larabee Street
Horicon, Wisconsin

	Wisconsin Department of Natural Resources Vapor Action Levels									
	Chloro-ethane	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2,2-TCA	PCE	TCE	1,1,2-TCA	Vinyl Chloride
Sub-Slab Vapor Action Level (ppbv)	**12,000**	**9**	**1,700**	**NE**	**NE**	**2.3**	**210**	**13**	**1.3**	**22**
Indoor Air Action Level (ppbv)	**370**	**0.27**	**52**	**NE**	**NE**	**0.068**	**6.2**	**0.39**	**0.038**	**0.65**

Sample Location	Date	Sub-Slab and Sewer Vapor Sample Results									
		Chloro-ethane	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2,2-TCA	PCE	TCE	1,1,2-TCA	Vinyl Chloride
146 Larabee Street	4/27/11	<100	<100	<100	<100	<100	<100	<100	**709**	<100	<100
146 Larabee Street SE-SS	2/8/19	NA	NA	NA	**2.3**	<0.50	NA	NA	**12**	NA	<0.71
146 Larabee Street SW-SS	2/8/19	NA	NA	NA	<0.60	<0.50	NA	NA	<0.36	NA	<0.71
146 Larabee Street NW-SS	2/8/19	NA	NA	NA	<0.60	<0.50	NA	NA	<0.36	NA	<0.71
146 Larabee Street NE-SS	2/8/19	NA	NA	NA	**32**	<0.50	NA	NA	**130**	NA	<0.71
146 Larabee Street Effluent	2/8/19	NA	NA	NA	<0.60	<0.50	NA	NA	**3.9**	NA	<0.71
146 Larabee St Basement Cleanout	5/31/19	NA	NA	NA	<0.25	<0.16	NA	NA	**0.20 J**	NA	<0.66
146 Larabee St 2nd Floor Bathroom Toilet	5/31/19	NA	NA	NA	<0.25	<0.16	NA	NA	**0.26 J**	NA	<0.66
146 Larabee St 1st Floor Bathroom Toilet	5/31/19	NA	NA	NA	<0.25	<0.16	NA	NA	**0.21 J**	NA	<0.66
		INDOOR AIR SAMPLING RESULTS									
		Pre-Mitigation Indoor Air Sample Results									
146 Larabee Street - Basement	8/16/11	<0.085	**1.21**	<0.085	<0.085	<0.085	<0.085	<0.085	**0.49**	<0.085	<0.085
146 Larabee Street - 1st Floor	8/16/11	<0.085	**2.61**	<0.085	<0.085	<0.085	<0.085	<0.085	**0.303**	<0.085	<0.085
146 Larabee - 2nd Floor	8/16/11	<0.085	**1.36**	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085
		Post-Mitigation Indoor Air Sample Results									
146 Larabee St-IA-Basement	10/17/12	NA	NA	NA	NA	NA	NA	NA	<0.17	NA	NA
146 Larabee St-IA-Grade	10/17/12	NA	NA	NA	NA	NA	NA	NA	<0.18	NA	NA
146 Larabee St-IA-Upper (2nd Floor)	10/17/12	NA	NA	NA	NA	NA	NA	NA	**0.21**	NA	NA
146 Larabee St-IA-Background	10/17/12	NA	NA	NA	NA	NA	NA	NA	<0.18	NA	NA
146 Larabee St-Basement IA	12/13/18	NA	NA	NA	**0.18 J**	<0.050	NA	<0.040	**0.70**	NA	<0.071
146 Larabee St-1st Floor IA	12/13/18	NA	NA	NA	**0.12 J**	<0.050	NA	<0.040	**1.1**	NA	<0.071
146 Larabee St-Background IA (Outside)	12/13/18	NA	NA	NA	<0.060	<0.050	NA	<0.040	<0.036	NA	<0.071
146 Larabee St-Basement IA	1/16/19	NA	NA	NA	<0.060	<0.050	NA	<0.040	**0.28**	NA	<0.071
146 Larabee St-1st Floor IA	1/16/19	NA	NA	NA	<0.060	<0.050	NA	<0.040	**0.50**	NA	<0.071
146 Larabee St-Background IA (Outside)	1/16/19	NA	NA	NA	<0.060	<0.050	NA	<0.040	<0.036	NA	<0.071
146 Larabee St-Basement IA	2/8/19	NA	NA	NA	**0.11 J**	<0.050	NA	NA	**0.39**	NA	<0.071
146 Larabee St-1st Floor IA	2/8/19	NA	NA	NA	**0.094 J**	<0.050	NA	NA	**0.59**	NA	<0.071
146 Larabee St-2nd Floor IA	2/8/19	NA	NA	NA	**0.10 J**	<0.050	NA	NA	**0.65**	NA	<0.071
146 Larabee St-Attic IA	2/8/19	NA	NA	NA	**0.10 J**	<0.050	NA	NA	**0.51**	NA	<0.071
146 Larabee St-Background IA (Outside)	2/8/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071
	2/27/19	**Mitigation System Upgrade to Include Separate Fans for East and West Systems - February 27, 2019**									
146 Larabee St-Basement IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.20**	NA	<0.041
146 Larabee St-1st Floor IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.37**	NA	<0.041
146 Larabee St-2nd Floor IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.49**	NA	<0.041
146 Larabee St-Attic IA	3/19/19	NA	NA	NA	<0.037	<0.074	NA	NA	**0.042 J**	NA	<0.041
146 Larabee St-Background IA (Outside)	3/19/19	NA	NA	NA	**0.22**	<0.074	NA	NA	**0.10 J**	NA	<0.041

TABLE 1
INDOOR AIR, SUB-SLAB AIR AND SEWER AIR ANALYTICAL RESULTS SUMMARY
146 Larabee Street
Horicon, Wisconsin

		Wisconsin Department of Natural Resources Vapor Action Levels									
		Chloro-ethane	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2,2-TCA	PCE	TCE	1,1,2-TCA	Vinyl Chloride
Sub-Slab Vapor Action Level (ppbv)		**12,000**	**9**	**1,700**	**NE**	**NE**	**2.3**	**210**	**13**	**1.3**	**22**
Indoor Air Action Level (ppbv)		**370**	**0.27**	**52**	**NE**	**NE**	**0.068**	**6.2**	**0.39**	**0.038**	**0.65**
	4/12/19	**Mitigation System Upgrade to an Additional Suction Location in the Northeast Quadrant of Home - April 12, 2019**									
146 Larabee St-Basement IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.16 J**	NA	<0.071
146 Larabee St-1st Floor IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.34**	NA	<0.071
146 Larabee St-2nd Floor IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.64**	NA	<0.071
146 Larabee St-Attic IA	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.27**	NA	<0.071
146 Larabee St-Background IA (Outside)	4/25/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071
146 Larabee St-Basement Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.42**	NA	<0.066
146 Larabee St-Basement IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.27**	NA	<0.066
146 Larabee St-1st Fl Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.44**	NA	<0.066
146 Larabee St-1st Fl IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.37**	NA	<0.066
146 Larabee St-2nd Fl East Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.64**	NA	<0.066
146 Larabee St-2nd Fl West Bathroom IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.89**	NA	<0.066
146 Larabee St-2nd Floor IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**1.0**	NA	<0.066
146 Larabee St-Attic IA	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.70**	NA	<0.066
146 Larabee St-Background IA (Outside)	5/31/19	NA	NA	NA	<0.025	<0.016	NA	NA	**0.21**	NA	<0.066
	8/19-23/19	**Mitigation System Shut Off Temporarily 3 Days Prior to Sampling**									
146 Larabee St-Basement IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.26**	NA	<0.071
146 Larabee St-1st Fl IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.050 J**	NA	<0.071
146 Larabee St-2nd Floor IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.26**	NA	<0.071
146 Larabee St-Attic IA	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.20**	NA	<0.071
146 Larabee St-Background IA (Outside)	8/23/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071
	9/26/19	**In Response to GZA Questioning, Owner Acknowledges that Specialty Cleaning Chemicals are Stored in a Cabinet on the Second Floor of the Home**									
	10/9/19	**Owner Provides GZA Specialty Cleaning Chemicals Used and GZA Confirms One Product Contains TCE. Cleaning Products are Removed from the Home**									
146 Larabee St-Basement IA	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.11 J**	NA	<0.071
146 Larabee St-1st Fl IA	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.26**	NA	<0.071
146 Larabee St-2nd Floor IA	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	**0.34**	NA	<0.071
146 Larabee St-Background IA (Outside)	12/20/19	NA	NA	NA	<0.060	<0.050	NA	NA	<0.036	NA	<0.071

Notes:
1. Sample results from 2011 are for sub-slab and indoor air samples collected by SCS BT Squared of Madison, Wisconsin and analyzed by the Wisconsin State Hygiene Laboratory of Madison, WI for VOCs in accordance with USEPA Method TO-15. Results are reported to the Limit of Detection (LOD).
2. Sample results from after 2011 are indoor air samples collected by GZA GeoEnvironmental, Inc. of Waukesha, WI and analyzed by Eurofins Air Toxics, Inc. of Folsom, CA or TestAmerica of Knoxville, TN for the listed VOCs in accordance with USEPA Method TO-15. Results are reported to the Reporting Limit (RL), Limit of Quantification (LOQ) or Method Detection Limit (MDL).
4. Analytical results are provided in units of parts per billion by volume (ppbv).
5. "J" denotes an estimated concentration between the method detection limit and the reporting limit. "NA" denotes the sample was not analyzed for the constituent.
6. The sub-slab and indoor air vapor action levels (VALs) were obtained from USEPA regional screening levels accessed at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm and using a 10-5 cancer risk and a hazard index of 1 with a 0.1 attenuation factor for the building slab.
7. Samples that exceed the applicable sub-slab or indoor VAL are provided in **bold/underlined** font.
8. Constituent abbreviations are used as follows:

1,2-DCA denotes 1,2-dichloroethane
TCE denotes trichloroethene
PCE denotes tetrachloroethene
cis-1,2-DCE denotes cis-1,2-dichloroethene
1,1-DCE denotes 1,1-dichloroethene
1,1,2-TCE denotes 1,1,2-Trichloroethane
1,1,2,2 TCA denotes 1,1,2,2-Tetrachloroethane
trans-1,2-DCE denotes trans-1,2-dichloroethene

ATTACHMENT 1

Not Included

ATTACHMENT 2

Indoor Air and Cabinet Air Laboratory Analytical Reports and Chain-of-Custody Forms

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Burlington
530 Community Drive
Suite 11
South Burlington, VT 05403
Tel: (802)660-1990

Laboratory Job ID: 200-56933-1
Client Project/Site: Former Gardner, Horicon - 20.0153134.20

For:
GZA GeoEnvironmental, Inc.
17975 W Sarah Lane, Suite 100
Brookfield, Wisconsin 53045

Attn: Bernard Fenelon

Sandie Fredrick

Authorized for release by:
1/21/2021 8:55:52 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: GZA GeoEnvironmental, Inc. Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Glossary

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

Job ID: 200-56933-1

Laboratory: Eurofins TestAmerica, Burlington

Narrative

Job Narrative
200-56933-1

Comments
No additional comments.

Receipt
The samples were received on 1/20/2021 10:30 AM; the samples arrived in good condition, and where required, properly preserved and on ice.

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

Detection Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE BACKGROUND IA
Lab Sample ID: 200-56933-1

No Detections.

Client Sample ID: 146 LARABEE BASEMENT IA
Lab Sample ID: 200-56933-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.24		0.20	0.030	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.3		1.1	0.16	ug/m3	1		TO-15	Total/NA

Client Sample ID: 146 LARABEE 2ND FLOOR IA
Lab Sample ID: 200-56933-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.53		0.20	0.030	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2.9		1.1	0.16	ug/m3	1		TO-15	Total/NA

Client Sample ID: 146 LARABEE 1ST FLOOR IA
Lab Sample ID: 200-56933-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.45		0.20	0.030	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2.4		1.1	0.16	ug/m3	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE BACKGROUND IA
Lab Sample ID: 200-56933-1

Date Collected: 01/19/21 09:23
Matrix: Air
Date Received: 01/20/21 10:30
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.030		0.20	0.030	ppb v/v			01/20/21 20:47	1
trans-1,2-Dichloroethene	<0.027		0.20	0.027	ppb v/v			01/20/21 20:47	1
Trichloroethene	<0.030		0.20	0.030	ppb v/v			01/20/21 20:47	1
Vinyl chloride	<0.026		0.20	0.026	ppb v/v			01/20/21 20:47	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.12		0.79	0.12	ug/m3			01/20/21 20:47	1
trans-1,2-Dichloroethene	<0.11		0.79	0.11	ug/m3			01/20/21 20:47	1
Trichloroethene	<0.16		1.1	0.16	ug/m3			01/20/21 20:47	1
Vinyl chloride	<0.066		0.51	0.066	ug/m3			01/20/21 20:47	1

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE BASEMENT IA
Lab Sample ID: 200-56933-2

Date Collected: 01/19/21 09:29
Matrix: Air
Date Received: 01/20/21 10:30
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.030		0.20	0.030	ppb v/v			01/20/21 21:42	1
trans-1,2-Dichloroethene	<0.027		0.20	0.027	ppb v/v			01/20/21 21:42	1
Trichloroethene	**0.24**		0.20	0.030	ppb v/v			01/20/21 21:42	1
Vinyl chloride	<0.026		0.20	0.026	ppb v/v			01/20/21 21:42	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.12		0.79	0.12	ug/m3			01/20/21 21:42	1
trans-1,2-Dichloroethene	<0.11		0.79	0.11	ug/m3			01/20/21 21:42	1
Trichloroethene	**1.3**		1.1	0.16	ug/m3			01/20/21 21:42	1
Vinyl chloride	<0.066		0.51	0.066	ug/m3			01/20/21 21:42	1

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE 2ND FLOOR IA
Lab Sample ID: 200-56933-3
Date Collected: 01/19/21 09:31
Matrix: Air
Date Received: 01/20/21 10:30
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.030		0.20	0.030	ppb v/v			01/20/21 22:36	1
trans-1,2-Dichloroethene	<0.027		0.20	0.027	ppb v/v			01/20/21 22:36	1
Trichloroethene	**0.53**		0.20	0.030	ppb v/v			01/20/21 22:36	1
Vinyl chloride	<0.026		0.20	0.026	ppb v/v			01/20/21 22:36	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.12		0.79	0.12	ug/m3			01/20/21 22:36	1
trans-1,2-Dichloroethene	<0.11		0.79	0.11	ug/m3			01/20/21 22:36	1
Trichloroethene	**2.9**		1.1	0.16	ug/m3			01/20/21 22:36	1
Vinyl chloride	<0.066		0.51	0.066	ug/m3			01/20/21 22:36	1

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE 1ST FLOOR IA
Lab Sample ID: 200-56933-4

Date Collected: 01/19/21 09:32
Matrix: Air
Date Received: 01/20/21 10:30
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.030		0.20	0.030	ppb v/v			01/20/21 23:31	1
trans-1,2-Dichloroethene	<0.027		0.20	0.027	ppb v/v			01/20/21 23:31	1
Trichloroethene	**0.45**		0.20	0.030	ppb v/v			01/20/21 23:31	1
Vinyl chloride	<0.026		0.20	0.026	ppb v/v			01/20/21 23:31	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.12		0.79	0.12	ug/m3			01/20/21 23:31	1
trans-1,2-Dichloroethene	<0.11		0.79	0.11	ug/m3			01/20/21 23:31	1
Trichloroethene	**2.4**		1.1	0.16	ug/m3			01/20/21 23:31	1
Vinyl chloride	<0.066		0.51	0.066	ug/m3			01/20/21 23:31	1

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 200-163106/5
Matrix: Air
Analysis Batch: 163106

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.030		0.20	0.030	ppb v/v			01/20/21 11:27	1
trans-1,2-Dichloroethene	<0.027		0.20	0.027	ppb v/v			01/20/21 11:27	1
Trichloroethene	<0.030		0.20	0.030	ppb v/v			01/20/21 11:27	1
Vinyl chloride	<0.026		0.20	0.026	ppb v/v			01/20/21 11:27	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.12		0.79	0.12	ug/m3			01/20/21 11:27	1
trans-1,2-Dichloroethene	<0.11		0.79	0.11	ug/m3			01/20/21 11:27	1
Trichloroethene	<0.16		1.1	0.16	ug/m3			01/20/21 11:27	1
Vinyl chloride	<0.066		0.51	0.066	ug/m3			01/20/21 11:27	1

Lab Sample ID: LCS 200-163106/3
Matrix: Air
Analysis Batch: 163106

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	10.4	8.29		ppb v/v		80	72 - 121
trans-1,2-Dichloroethene	10.3	11.1		ppb v/v		108	69 - 137
Trichloroethene	10.3	10.5		ppb v/v		102	73 - 122
Vinyl chloride	9.99	11.6		ppb v/v		116	61 - 135

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	41	32.9		ug/m3		80	72 - 121
trans-1,2-Dichloroethene	41	44.1		ug/m3		108	69 - 137
Trichloroethene	55	56.3		ug/m3		102	73 - 122
Vinyl chloride	26	29.6		ug/m3		116	61 - 135

QC Association Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Air - GC/MS VOA

Analysis Batch: 163106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-56933-1	146 LARABEE BACKGROUND IA	Total/NA	Air	TO-15	
200-56933-2	146 LARABEE BASEMENT IA	Total/NA	Air	TO-15	
200-56933-3	146 LARABEE 2ND FLOOR IA	Total/NA	Air	TO-15	
200-56933-4	146 LARABEE 1ST FLOOR IA	Total/NA	Air	TO-15	
MB 200-163106/5	Method Blank	Total/NA	Air	TO-15	
LCS 200-163106/3	Lab Control Sample	Total/NA	Air	TO-15	

Lab Chronicle

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE BACKGROUND IA
Lab Sample ID: 200-56933-1
Date Collected: 01/19/21 09:23
Matrix: Air
Date Received: 01/20/21 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	163106	01/20/21 20:47	K1P	TAL BUR

Client Sample ID: 146 LARABEE BASEMENT IA
Lab Sample ID: 200-56933-2
Date Collected: 01/19/21 09:29
Matrix: Air
Date Received: 01/20/21 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	163106	01/20/21 21:42	K1P	TAL BUR

Client Sample ID: 146 LARABEE 2ND FLOOR IA
Lab Sample ID: 200-56933-3
Date Collected: 01/19/21 09:31
Matrix: Air
Date Received: 01/20/21 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	163106	01/20/21 22:36	K1P	TAL BUR

Client Sample ID: 146 LARABEE 1ST FLOOR IA
Lab Sample ID: 200-56933-4
Date Collected: 01/19/21 09:32
Matrix: Air
Date Received: 01/20/21 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	163106	01/20/21 23:31	K1P	TAL BUR

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Laboratory: Eurofins TestAmerica, Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2336	02-25-23
Connecticut	State	PH-0751	09-30-21
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	05-16-21
Florida	NELAP	E87467	06-30-21
Minnesota	NELAP	050-999-436	12-31-21
New Hampshire	NELAP	2006	12-18-21
New Jersey	NELAP	VT972	06-30-21
New York	NELAP	10391	04-01-21
Pennsylvania	NELAP	68-00489	04-30-21
Rhode Island	State	LAO00298	12-30-20 *
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-17-00272	10-30-23
Vermont	State	VT4000	02-10-22
Virginia	NELAP	460209	12-14-21
Wisconsin	State	399133350	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 200-56933-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
200-56933-1	146 LARABEE BACKGROUND IA	Air	01/19/21 09:23	01/20/21 10:30	Air Canister (6-Liter) #4331
200-56933-2	146 LARABEE BASEMENT IA	Air	01/19/21 09:29	01/20/21 10:30	Air Canister (6-Liter) #5898
200-56933-3	146 LARABEE 2ND FLOOR IA	Air	01/19/21 09:31	01/20/21 10:30	Air Canister (6-Liter) #6148
200-56933-4	146 LARABEE 1ST FLOOR IA	Air	01/19/21 09:32	01/20/21 10:30	Air Canister (6-Liter) #3639

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403-6809
phone 802.660.1990 fax 802.660.1919

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

eurofins | Environment Testing TestAmerica

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Information	**Client Project Manager:**	**Samples Collected By:** C. AINSWORTH	COC No: 1 of 1 COCs
Company Name: GZA GEOENVIRONMENTAL INC.	**Phone:**		
Address: 17975 W. SARAH LANE STE 100	**Email:**		
City/State/Zip BROOKFIELD, WI 53045			
Phone: 262-754-2560	**Site Contact:**		**For Lab Use Only:**
FAX:	**Tel/Fax**		Walk-in Client:
Project Name:	**Analysis Turnaround Time**		Lab Sampling:
Site/Location:	Standard (Specific):		Job / SDG No.:
P O #	Rush (Specifiy):		(See below for Add'l Items)

Sample Identification	Sample Start Date	Time Start	Sample End Date	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)	TO-15 SIM	EPA 3C	EPA 25C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Sample Type	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
146 LARABEE BACKGROUND IA	1/18/21	930	1/19/21	923	-26	-1	3739	4331	X								X						
146 LARABEE BASEMENT IA		936		929	-29	-8	4200	5898	X								X						
146 LARABEE 2ND FLOOR IA		941		931	-29	-6	8753	6148	X								X						
146 LARABEE 1ST FLOOR IA		944		932	-29	-5	5192	3639	X								X						

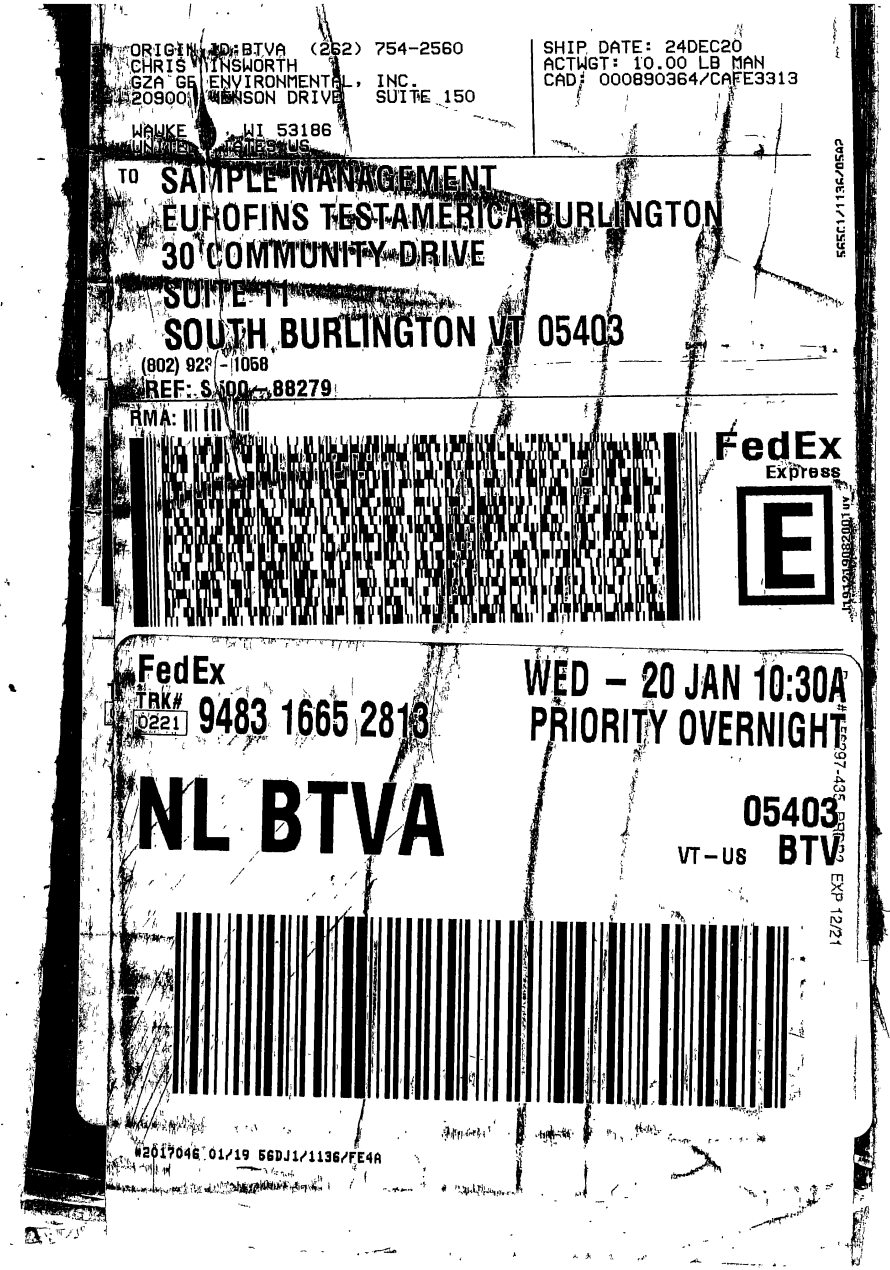
200-56933 COC

Temperature (Fahrenheit)	Interior	Ambient
Start		
Stop		

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

Special Instructions/QC Requirements & Comments: PLEASE ANALYZE FOR: TCE, CIS AND TRANS 1,2 DCE AND VC

Samples Shipped by:	**Date / Time:** 1/19/21 1410	**Samples Received by:** PER FED EX
Samples Relinquished by:	**Date / Time:**	**Received by:** WDT ETA-BURL 1-20-21 10:30
Relinquished by:	**Date / Time:**	**Received by:**
Lab Use Only: **Shipper Name:**	**Opened by:**	**Condition:**


ORIGIN ID:BTVA (262) 754-2560
CHRIS INSWORTH
GZA GS ENVIRONMENTAL, INC.
20900 ENSON DRIVE SUITE 150
WAUKE WI 53186
UNITED STATES US

SHIP DATE: 24DEC20
ACTWGT: 10.00 LB MAN
CAD: 000890364/CAFE3313

TO SAMPLE MANAGEMENT
EUROFINS TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 923 - 1068
REF: S500-88279

RMA:

FedEx Express

FedEx
TRK# 0221 9483 1665 2813

WED - 20 JAN 10:30A
PRIORITY OVERNIGHT

NL BTVA

05403
VT-US BTV

#2017046 01/19 5GDJ1/1136/FE4A

Login Sample Receipt Checklist

Client: GZA GeoEnvironmental, Inc. Job Number: 200-56933-1

Login Number: 56933 **List Source: Eurofins TestAmerica, Burlington**
List Number: 1
Creator: Lavigne, Scott M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	929879
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician	Can Size	Certification Type:
Top Rack	10	25	12/4/2020	1521	22	22	SML	6 liter	batch

Port	Can ID	Initial[1] (psia)	Final (psia)	Diff.[3]	Final ("Hg)	Initial Reading Gauge:	Date:	Time:	Tech:	Temp:	Final Reading Gauge:	Date:	Time:	Tech:	Temp:
1	3639	103	103	0	30.0	G26	12/5/20	1204	S	22.0	G26	12/19/20	1119	S	22.0
2	6148	"	103	0	30.0	G26	"	"	"	"	G26	"	"	"	"
3	5125	102	103	0	29.6	G26	12/19/20	1221	S	22.0	G26	12/20/20	1304	S	22.0
4	4777	103	103	0	30.0	G26	12/5/20	1204	S	22.0	G26	12/19/20	1119	S	22.0
5	5898		103	0	30.0	G26					G26				
6	2624		103	0	30.0	G26					G26				
7	5628		103	0	30.0	G26					G26				
8	9242		103	0	30.0	G26					G26				
9	5457		103	0	30.0	G26					G26				
10	4331		103	0	30.0	G26					G26				
11	4634		103	0	30.0	G26					G26				
12	4778	"	103	0	30.0	G26	"	"	"	"	G26	"	"	"	"

[1] Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

[3] Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister **PM Authorization** **Date:**

Clean Canister Certification Analysis & Authorization of Release to Inventory

Test Method: ☒ TO15 Routine ☐ TO15 LL

Can ID	Date	Sequence	Analyst	Inventory Level 1	2	3	4	Secondary Review Limited	Review Date	Revi
5125	12/9/20	43957	AB1		XXXXXXX				12/9/20	JMB

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Dup Tees/Vac gauges (enter IDs if included):

Comments:

Form ID: FAI023:12
Revision Date: 12/18/2018

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-56350-1

SDG No.:

Client Sample ID: 5125 Lab Sample ID: 200-56350-3

Matrix: Air Lab File ID: 43957-26.D

Analysis Method: TO-15 Date Collected: 12/04/2020 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 12/09/2020 06:04

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 161818 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	0.10	U	0.10	0.10
75-45-6	Freon 22	0.10	U	0.10	0.10
76-14-2	1,2-Dichlorotetrafluoroethane	0.040	U	0.040	0.040
74-87-3	Chloromethane	0.10	U	0.10	0.10
106-97-8	n-Butane	0.10	U	0.10	0.10
75-01-4	Vinyl chloride	0.040	U	0.040	0.040
106-99-0	1,3-Butadiene	0.040	U	0.040	0.040
74-83-9	Bromomethane	0.040	U	0.040	0.040
75-00-3	Chloroethane	0.10	U	0.10	0.10
593-60-2	Bromoethene(Vinyl Bromide)	0.040	U	0.040	0.040
75-69-4	Trichlorofluoromethane	0.040	U	0.040	0.040
64-17-5	Ethanol	1.0	U	1.0	1.0
76-13-1	Freon TF	0.040	U	0.040	0.040
75-35-4	1,1-Dichloroethene	0.040	U	0.040	0.040
67-64-1	Acetone	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	1.0	U	1.0	1.0
75-15-0	Carbon disulfide	0.10	U	0.10	0.10
107-05-1	3-Chloropropene	0.10	U	0.10	0.10
75-09-2	Methylene Chloride	0.10	U	0.10	0.10
75-65-0	tert-Butyl alcohol	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.040	U	0.040	0.040
156-60-5	trans-1,2-Dichloroethene	0.040	U	0.040	0.040
110-54-3	n-Hexane	0.040	U	0.040	0.040
75-34-3	1,1-Dichloroethane	0.040	U	0.040	0.040
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
141-78-6	Ethyl acetate	1.0	U	1.0	1.0
78-93-3	Methyl Ethyl Ketone	0.10	U	0.10	0.10
156-59-2	cis-1,2-Dichloroethene	0.040	U	0.040	0.040
540-59-0	1,2-Dichloroethene, Total	0.080	U	0.080	0.080
67-66-3	Chloroform	0.040	U	0.040	0.040
109-99-9	Tetrahydrofuran	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	0.040	U	0.040	0.040
110-82-7	Cyclohexane	0.040	U	0.040	0.040
56-23-5	Carbon tetrachloride	0.040	U	0.040	0.040
540-84-1	2,2,4-Trimethylpentane	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-56350-1

SDG No.:

Client Sample ID: 5125 Lab Sample ID: 200-56350-3

Matrix: Air Lab File ID: 43957-26.D

Analysis Method: TO-15 Date Collected: 12/04/2020 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 12/09/2020 06:04

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 161818 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.040	U	0.040	0.040
107-06-2	1,2-Dichloroethane	0.040	U	0.040	0.040
142-82-5	n-Heptane	0.040	U	0.040	0.040
79-01-6	Trichloroethene	0.040	U	0.040	0.040
80-62-6	Methyl methacrylate	0.10	U	0.10	0.10
78-87-5	1,2-Dichloropropane	0.040	U	0.040	0.040
123-91-1	1,4-Dioxane	1.0	U	1.0	1.0
75-27-4	Bromodichloromethane	0.040	U	0.040	0.040
10061-01-5	cis-1,3-Dichloropropene	0.040	U	0.040	0.040
108-10-1	methyl isobutyl ketone	0.10	U	0.10	0.10
108-88-3	Toluene	0.040	U	0.040	0.040
10061-02-6	trans-1,3-Dichloropropene	0.040	U	0.040	0.040
79-00-5	1,1,2-Trichloroethane	0.040	U	0.040	0.040
127-18-4	Tetrachloroethene	0.040	U	0.040	0.040
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.10	U	0.10	0.10
124-48-1	Dibromochloromethane	0.040	U	0.040	0.040
106-93-4	1,2-Dibromoethane	0.040	U	0.040	0.040
108-90-7	Chlorobenzene	0.040	U	0.040	0.040
100-41-4	Ethylbenzene	0.040	U	0.040	0.040
179601-23-1	m,p-Xylene	0.10	U	0.10	0.10
95-47-6	Xylene, o-	0.040	U	0.040	0.040
1330-20-7	Xylene (total)	0.14	U	0.14	0.14
100-42-5	Styrene	0.040	U	0.040	0.040
75-25-2	Bromoform	0.040	U	0.040	0.040
98-82-8	Cumene	0.040	U	0.040	0.040
79-34-5	1,1,2,2-Tetrachloroethane	0.040	U	0.040	0.040
103-65-1	n-Propylbenzene	0.040	U	0.040	0.040
622-96-8	4-Ethyltoluene	0.040	U	0.040	0.040
108-67-8	1,3,5-Trimethylbenzene	0.040	U	0.040	0.040
95-49-8	2-Chlorotoluene	0.040	U	0.040	0.040
98-06-6	tert-Butylbenzene	0.040	U	0.040	0.040
95-63-6	1,2,4-Trimethylbenzene	0.040	U	0.040	0.040
135-98-8	sec-Butylbenzene	0.040	U	0.040	0.040
99-87-6	4-Isopropyltoluene	0.040	U	0.040	0.040
541-73-1	1,3-Dichlorobenzene	0.040	U	0.040	0.040
106-46-7	1,4-Dichlorobenzene	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-56350-1

SDG No.:

Client Sample ID: 5125 Lab Sample ID: 200-56350-3

Matrix: Air Lab File ID: 43957-26.D

Analysis Method: TO-15 Date Collected: 12/04/2020 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 12/09/2020 06:04

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 161818 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.040	U	0.040	0.040
104-51-8	n-Butylbenzene	0.040	U	0.040	0.040
95-50-1	1,2-Dichlorobenzene	0.040	U	0.040	0.040
120-82-1	1,2,4-Trichlorobenzene	0.10	U	0.10	0.10
87-68-3	Hexachlorobutadiene	0.040	U	0.040	0.040
91-20-3	Naphthalene	0.10	U	0.10	0.10

Eurofins TestAmerica, Burlington
Target Compound Quantitation Report

Data File: \\chromfs\Burlington\ChromData\CHX.i\20201208-43957.b\43957-26.D
Lims ID: 200-56350-A-3
Client ID: 5125
Sample Type: Client
Inject. Date: 09-Dec-2020 06:04:30 ALS Bottle#: 25 Worklist Smp#: 26
Purge Vol: 200.000 mL Dil. Factor: 0.2000
Sample Info: 200-0043957-026
Misc. Info.: 56350-3
Operator ID: ggg Instrument ID: CHX.i

Method: \\chromfs\Burlington\ChromData\CHX.i\20201208-43957.b\TO15_MasterMethod_X.m.m
Limit Group: AI_TO15_ICAL
Last Update: 09-Dec-2020 09:04:17 Calib Date: 04-Dec-2020 14:12:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromfs\Burlington\ChromData\CHX.i\20201203-43925.b\43925-21.D

Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
Process Host: CTX1675

First Level Reviewer: bourdeaut Date: 09-Dec-2020 09:04:17

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		4.349				ND	
2 Dichlorodifluoromethane	85		4.445				ND	
3 Chlorodifluoromethane	51		4.488				ND	
4 1,2-Dichloro-1,1,2,2-tetrafluoro	85		4.803				ND	
5 Chloromethane	50		4.926				ND	
6 Butane	43		5.237				ND	
7 Vinyl chloride	62		5.242				ND	
8 Butadiene	54		5.354				ND	
10 Bromomethane	94		6.071				ND	
11 Chloroethane	64		6.339				ND	
13 Vinyl bromide	106		6.761				ND	
14 Trichlorofluoromethane	101		6.911				ND	
17 Ethanol	45	7.275	7.259	0.016	98	2775	0.2387	
21 1,1-Dichloroethene	96		7.976				ND	
20 112TCTFE	101		8.002				ND	
22 Acetone	43		8.040				ND	7
24 Isopropyl alcohol	45		8.307				ND	7
23 Carbon disulfide	76		8.393				ND	
25 3-Chloro-1-propene	41		8.677				ND	
27 Methylene Chloride	49		8.912				ND	7
28 2-Methyl-2-propanol	59		9.072				ND	
29 Methyl tert-butyl ether	73		9.383				ND	
31 trans-1,2-Dichloroethene	61		9.404				ND	
S 30 1,2-Dichloroethene, Total	61		9.665				ND	7
33 Hexane	57		9.896				ND	
35 Vinyl acetate	43		10.169				ND	
34 1,1-Dichloroethane	63		10.174				ND	
38 2-Butanone (MEK)	72		11.121				ND	
37 cis-1,2-Dichloroethene	96		11.164				ND	
39 Ethyl acetate	88		11.202				ND	
* 40 Chlorobromomethane	128	11.587	11.587	0.000	87	200271	10.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
41 Tetrahydrofuran	42		11.603				ND	
42 Chloroform	83		11.758				ND	
44 1,1,1-Trichloroethane	97		12.058				ND	
43 Cyclohexane	84		12.191				ND	
45 Carbon tetrachloride	117		12.336				ND	
47 Benzene	78		12.683				ND	
48 1,2-Dichloroethane	62		12.774				ND	
46 Isooctane	57		12.881				ND	
49 n-Heptane	43		13.186				ND	
* 50 1,4-Difluorobenzene	114	13.422	13.422	0.000	93	1023127	10.0	
53 Trichloroethene	95		13.850				ND	
54 1,2-Dichloropropane	63		14.315				ND	
55 Methyl methacrylate	69		14.374				ND	
56 1,4-Dioxane	88		14.422				ND	7
57 Dibromomethane	174		14.476				ND	
58 Dichlorobromomethane	83		14.786				ND	
60 cis-1,3-Dichloropropene	75		15.578				ND	
61 4-Methyl-2-pentanone (MIBK)	43		15.818				ND	
65 Toluene	92		16.214				ND	
66 trans-1,3-Dichloropropene	75		16.637				ND	
67 1,1,2-Trichloroethane	83		17.017				ND	
68 Tetrachloroethene	166		17.199				ND	
69 2-Hexanone	43		17.397				ND	
71 Chlorodibromomethane	129		17.760				ND	
72 Ethylene Dibromide	107		18.001				ND	
* 74 Chlorobenzene-d5	117	18.900	18.894	0.006	85	820592	10.0	
75 Chlorobenzene	112		18.959				ND	
76 Ethylbenzene	91		19.141				ND	U
78 m-Xylene & p-Xylene	106		19.403				ND	
S 73 Xylenes, Total	106		19.600				ND	7
79 o-Xylene	106		20.173				ND	
80 Styrene	104		20.216				ND	
81 Bromoform	173		20.569				ND	
82 Isopropylbenzene	105		20.858				ND	
84 1,1,2,2-Tetrachloroethane	83		21.377				ND	
85 N-Propylbenzene	91		21.564				ND	
89 2-Chlorotoluene	91		21.714				ND	
88 4-Ethyltoluene	105		21.757				ND	7
90 1,3,5-Trimethylbenzene	105		21.853				ND	7
92 tert-Butylbenzene	119		22.329				ND	
93 1,2,4-Trimethylbenzene	105		22.415				ND	
94 sec-Butylbenzene	105		22.650				ND	
96 1,3-Dichlorobenzene	146		22.832				ND	7
95 4-Isopropyltoluene	119		22.864				ND	
97 1,4-Dichlorobenzene	146		22.971				ND	7
98 Benzyl chloride	91		23.115				ND	
100 n-Butylbenzene	91		23.420				ND	
101 1,2-Dichlorobenzene	146		23.463				ND	
103 1,2,4-Trichlorobenzene	180		25.919				ND	
104 Hexachlorobutadiene	225		26.149				ND	
105 Naphthalene	128		26.405				ND	

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

U - Marked Undetected

Reagents:

ATTO15XISs_00002 Amount Added: 20.00 Units: mL Run Reagent

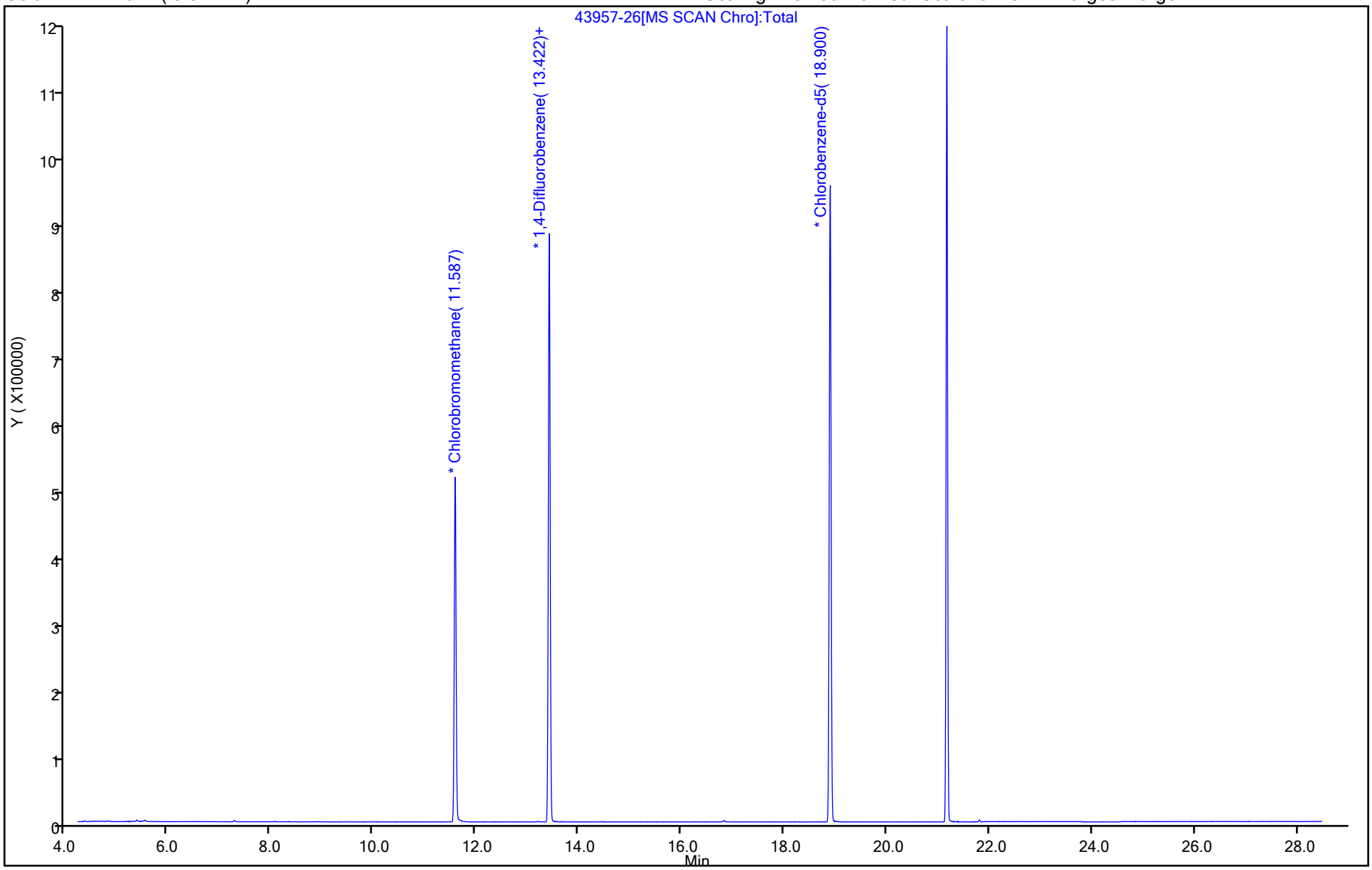
Report Date: 09-Dec-2020 09:04:17 Chrom Revision: 2.3 12-Nov-2020 21:52:08

Eurofins TestAmerica, Burlington

Data File: \\chromfs\Burlington\ChromData\CHX.i\20201208-43957.b\43957-26.D

Injection Date:	09-Dec-2020 06:04:30	Instrument ID:	CHX.i	Operator ID:	ggg
Lims ID:	200-56350-A-3	Lab Sample ID:	200-56350-3	Worklist Smp#:	26
Client ID:	5125				
Purge Vol:	200.000 mL	Dil. Factor:	0.2000	ALS Bottle#:	25
Method:	TO15_MasterMethod_X.m	Limit Group:	AI_TO15_ICAL		

Column: RTX-624 (0.32 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



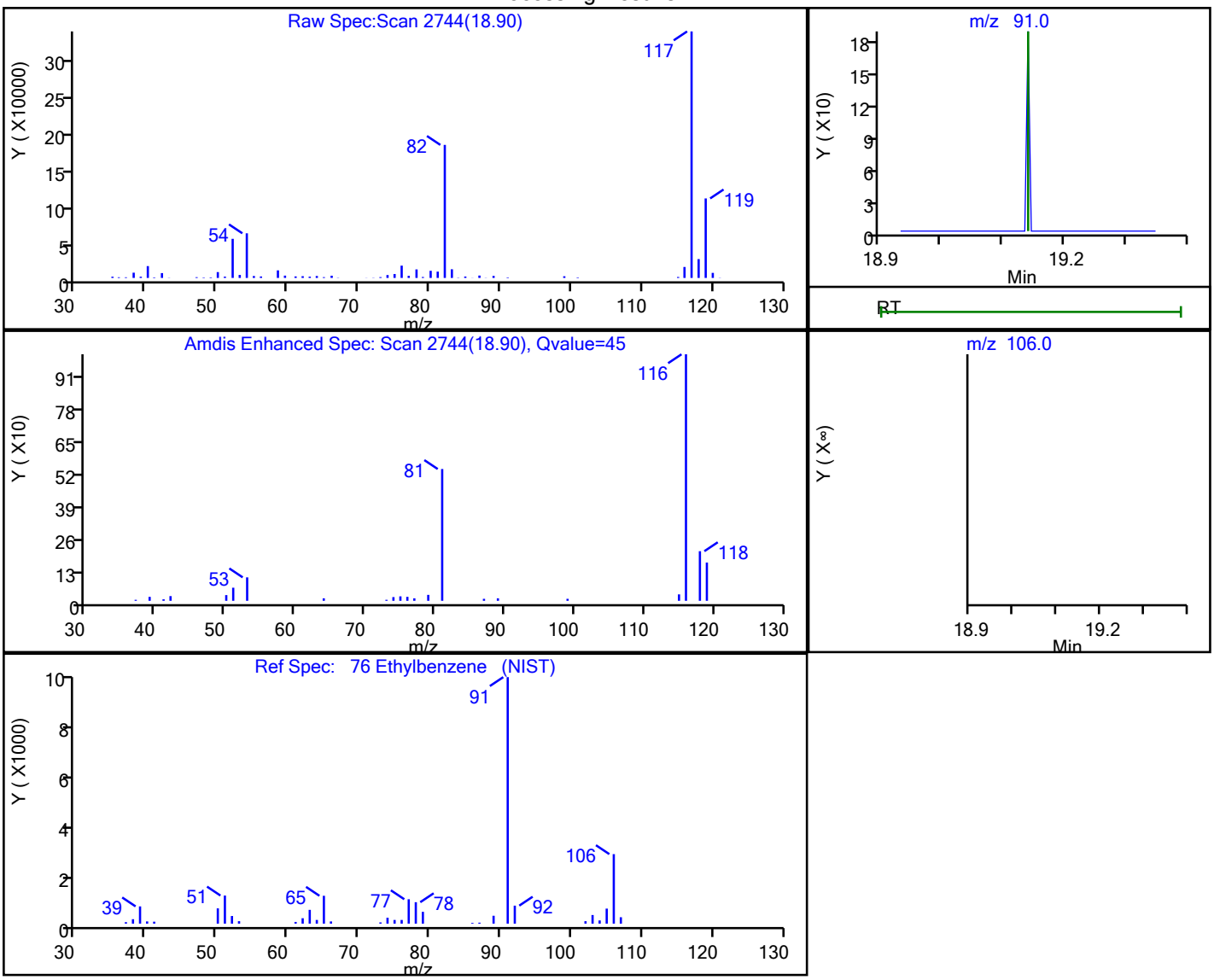
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromfs\Burlington\ChromData\CHX.i\20201208-43957.b\43957-26.D				
Injection Date:	09-Dec-2020 06:04:30	Instrument ID:	CHX.i		
Lims ID:	200-56350-A-3	Lab Sample ID:	200-56350-3		
Client ID:	5125				
Operator ID:	ggg	ALS Bottle#:	25	Worklist Smp#:	26
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_X.m	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

76 Ethylbenzene, CAS: 100-41-4

Processing Results



RT	Mass	Response	Amount
18.90	91.00	1510	0.011102
19.14	106.00	0	

Reviewer: bourdeaut, 09-Dec-2020 09:03:40

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-22046-1
Client Project/Site: Former Gardner, Horicon - 20.0153134.20

For:
GZA GeoEnvironmental, Inc.
17975 W Sarah Lane, Suite 100
Brookfield, Wisconsin 53045

Attn: Bernard Fenelon

Sandra Fredrick

Authorized for release by:
2/26/2021 12:09:51 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

Table of Contents

Definitions/Glossary

Client: GZA GeoEnvironmental, Inc. Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Glossary

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

Case Narrative

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Job ID: 140-22046-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-22046-1

Comments
No additional comments.

Receipt
The samples were received on 2/24/2021 10:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice.

Air - GC/MS VOA
Methods TO 15 LL, TO-15: EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

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

Detection Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE GUN CABINET RACK
Lab Sample ID: 140-22046-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.98		0.20	0.036	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	5.3		1.1	0.19	ug/m3	1		TO-15	Total/NA

Client Sample ID: 146 LARABEE GUN CABINET SHELL STORAGE
Lab Sample ID: 140-22046-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	19		0.20	0.036	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	100		1.1	0.19	ug/m3	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE GUN CABINET RACK
Lab Sample ID: 140-22046-1

Date Collected: 02/23/21 10:38
Matrix: Air
Date Received: 02/24/21 10:45
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.060		0.20	0.060	ppb v/v			02/25/21 15:27	1
1,2-Dichloroethene, Total	<0.050		0.40	0.050	ppb v/v			02/25/21 15:27	1
trans-1,2-Dichloroethene	<0.050		0.20	0.050	ppb v/v			02/25/21 15:27	1
Trichloroethene	**0.98**		0.20	0.036	ppb v/v			02/25/21 15:27	1
Vinyl chloride	<0.071		0.40	0.071	ppb v/v			02/25/21 15:27	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.24		0.79	0.24	ug/m3			02/25/21 15:27	1
1,2-Dichloroethene, Total	<0.20		1.6	0.20	ug/m3			02/25/21 15:27	1
trans-1,2-Dichloroethene	<0.20		0.79	0.20	ug/m3			02/25/21 15:27	1
Trichloroethene	**5.3**		1.1	0.19	ug/m3			02/25/21 15:27	1
Vinyl chloride	<0.18		1.0	0.18	ug/m3			02/25/21 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*60 - 140*		*02/25/21 15:27*	*1*

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE GUN CABINET SHELL STORAGE

Lab Sample ID: 140-22046-2

Date Collected: 02/23/21 10:39
Matrix: Air
Date Received: 02/24/21 10:45
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.060		0.20	0.060	ppb v/v			02/25/21 16:16	1
1,2-Dichloroethene, Total	<0.050		0.40	0.050	ppb v/v			02/25/21 16:16	1
trans-1,2-Dichloroethene	<0.050		0.20	0.050	ppb v/v			02/25/21 16:16	1
Trichloroethene	**19**		0.20	0.036	ppb v/v			02/25/21 16:16	1
Vinyl chloride	<0.071		0.40	0.071	ppb v/v			02/25/21 16:16	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.24		0.79	0.24	ug/m3			02/25/21 16:16	1
1,2-Dichloroethene, Total	<0.20		1.6	0.20	ug/m3			02/25/21 16:16	1
trans-1,2-Dichloroethene	<0.20		0.79	0.20	ug/m3			02/25/21 16:16	1
Trichloroethene	**100**		1.1	0.19	ug/m3			02/25/21 16:16	1
Vinyl chloride	<0.18		1.0	0.18	ug/m3			02/25/21 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*60 - 140*		*02/25/21 16:16*	*1*

Default Detection Limits

Client: GZA GeoEnvironmental, Inc. Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	RL	MDL	Units
1,2-Dichloroethene, Total	0.40	0.050	ppb v/v
1,2-Dichloroethene, Total	1.6	0.20	ug/m3
cis-1,2-Dichloroethene	0.20	0.060	ppb v/v
cis-1,2-Dichloroethene	0.79	0.24	ug/m3
trans-1,2-Dichloroethene	0.20	0.050	ppb v/v
trans-1,2-Dichloroethene	0.79	0.20	ug/m3
Trichloroethene	0.20	0.036	ppb v/v
Trichloroethene	1.1	0.19	ug/m3
Vinyl chloride	0.40	0.071	ppb v/v
Vinyl chloride	1.0	0.18	ug/m3

Surrogate Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)								
		BFB								
Lab Sample ID	Client Sample ID	(60-140)								
140-22046-1	146 LARABEE GUN CABINET F	100								
140-22046-2	146 LARABEE GUN CABINET SHELL STORAGE	102								
LCS 140-47208/1002	Lab Control Sample	100								
MB 140-47208/9	Method Blank	98								

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 140-47208/9
Matrix: Air
Analysis Batch: 47208

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.060		0.20	0.060	ppb v/v			02/25/21 11:58	1
1,2-Dichloroethene, Total	<0.050		0.40	0.050	ppb v/v			02/25/21 11:58	1
trans-1,2-Dichloroethene	<0.050		0.20	0.050	ppb v/v			02/25/21 11:58	1
Trichloroethene	<0.036		0.20	0.036	ppb v/v			02/25/21 11:58	1
Vinyl chloride	<0.071		0.40	0.071	ppb v/v			02/25/21 11:58	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	<0.24		0.79	0.24	ug/m3			02/25/21 11:58	1
1,2-Dichloroethene, Total	<0.20		1.6	0.20	ug/m3			02/25/21 11:58	1
trans-1,2-Dichloroethene	<0.20		0.79	0.20	ug/m3			02/25/21 11:58	1
Trichloroethene	<0.19		1.1	0.19	ug/m3			02/25/21 11:58	1
Vinyl chloride	<0.18		1.0	0.18	ug/m3			02/25/21 11:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*60 - 140*		*02/25/21 11:58*	*1*

Lab Sample ID: LCS 140-47208/1002
Matrix: Air
Analysis Batch: 47208

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	2.00	1.89		ppb v/v		95	70 - 130
1,2-Dichloroethene, Total	4.00	3.84		ppb v/v		96	70 - 130
trans-1,2-Dichloroethene	2.00	1.95		ppb v/v		97	70 - 130
Trichloroethene	2.00	1.89		ppb v/v		95	70 - 130
Vinyl chloride	2.00	1.99		ppb v/v		100	70 - 130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	7.9	7.50		ug/m3		95	70 - 130
1,2-Dichloroethene, Total	16	15.2		ug/m3		96	70 - 130
trans-1,2-Dichloroethene	7.9	7.72		ug/m3		97	70 - 130
Trichloroethene	11	10.2		ug/m3		95	70 - 130
Vinyl chloride	5.1	5.09		ug/m3		100	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*60 - 140*

QC Association Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Air - GC/MS VOA

Analysis Batch: 47208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-22046-1	146 LARABEE GUN CABINET RACK	Total/NA	Air	TO-15	
140-22046-2	146 LARABEE GUN CABINET SHELL STORAGE	Total/NA	Air	TO-15	
MB 140-47208/9	Method Blank	Total/NA	Air	TO-15	
LCS 140-47208/1002	Lab Control Sample	Total/NA	Air	TO-15	

Lab Chronicle

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Client Sample ID: 146 LARABEE GUN CABINET RACK
Lab Sample ID: 140-22046-1
Date Collected: 02/23/21 10:38
Matrix: Air
Date Received: 02/24/21 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	200 mL	500 mL	47208	02/25/21 15:27	S1K	TAL KNX
	Instrument ID: MS									

Client Sample ID: 146 LARABEE GUN CABINET SHELL STORAGE
Lab Sample ID: 140-22046-2
Date Collected: 02/23/21 10:39
Matrix: Air
Date Received: 02/24/21 10:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	200 mL	500 mL	47208	02/25/21 16:16	S1K	TAL KNX
	Instrument ID: MS									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-47208/9
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	200 mL	500 mL	47208	02/25/21 11:58	S1K	TAL KNX
	Instrument ID: MS									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-47208/1002
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	500 mL	500 mL	47208	02/25/21 07:17	S1K	TAL KNX
	Instrument ID: MS									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: GZA GeoEnvironmental, Inc. Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Laboratory: Eurofins TestAmerica, Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-21
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	10-31-21
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-22
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	04-01-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-01-22
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	01-02-22
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

Method Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: GZA GeoEnvironmental, Inc.
Job ID: 140-22046-1
Project/Site: Former Gardner, Horicon - 20.0153134.20

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-22046-1	146 LARABEE GUN CABINET RACK	Air	02/23/21 10:38	02/24/21 10:45	Air Canister (6-Liter) #10364
140-22046-2	146 LARABEE GUN CABINET SHELL STORAGE	Air	02/23/21 10:39	02/24/21 10:45	Air Canister (6-Liter) #12107

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

140-22046 Chain of Custody

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Information	Client Project Manager: BERNARD FOLEY	Samples Collected By: C. AINSWORTH	COC No: 1 of 1 COCs
Company Name: GZA GEOENVIRONMENTAL INC.	Phone:		TALS Project #:
Address: 11475 W. SAINT LAWE SITE 100	Email:		For Lab Use Only: Walk-in Client: Lab Sampling:
City/State/Zip: BROOKFIELD, WI 53045			Job / SDG No.:
Phone: 262-754-2560	Site Contact:		(See below for Add'l Items)
FAX:	Tel/Fax		
Project Name: FORMER SARDINE MANUFACTURING	Analysis Turnaround Time		
Site/Location: NORWAY, WI	Standard (Specific): NORMAL		
P O #	Rush (Specify):		

Sample Identification	Sample Start Date	Time Start	Sample End Date	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)	TO-15 SIM	EPA 3C	EPA 25C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Sample Type	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
146 LARABEE GUN CABINET RACK	2/23/21	922	2/23/21	1038	-30	-4	12070	10364	X													X	
146 LARABEE GUN CABINET SHELL STORAGE 1		922	1	1039	-30	-4	11947	12107	X													X	

Temperature (Fahrenheit)	Interior	Ambient
Start		
Stop		

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

Received @ ambient, 1 Box, FedEx SO trk# 816[illegible] 1027 8828
Custody seal intact KW 2/24/21

Special Instructions/QC Requirements & Comments:
PLEASE ANALYZE FOR: TCE; CIS AND TRANS 1,2 DCE; VC

Samples Shipped by:	Date / Time: 2/23/21 1400	Samples Received by: FED EX	
Samples Relinquished by:	Date / Time:	Received by: ETA 2/24/21 1045	
Relinquished by:	Date / Time:	Received by:	2 cans, 2 KR

Form No. CA-C-WI-003, Rev. 2.25, dated 10/6/2020

2/26/2021

Loc: 140
22046

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**	
2. Were ambient air containers received intact?			✓	☑ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?	✓			☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID :_____ Correction factor: _____			✓	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**	
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**	
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**	
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**	
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**	
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**	
10. Was the sampler identified on the COC?	✓			☐ **Sampler Not Listed on COC**	
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**	
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**	
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**	
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**	
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**	
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:_____			✓	☐ **Residual Chlorine**	
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info	

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 500141/93 PM Instructions: _____

Sample Receiving Associate: _____ Date: 2/24/21

QA026R32.doc, 062719

TestAmerica Knoxville - Air Canister Initial Pressure Check

Gauge ID: G5
Date: 2/25/2021

Analyst	Sample ID	Asset #	Cleaning Job	Cert	Size (L)	Pressure @ Receipt (-in Hg or +psig)	Time	Comments
BRS	140-22046-a-1	10364	21595	IND	6	-2.6	10:42	
BRS	140-22046-a-2	12107	21601	IND	6	-3.0	10:43	

□ Receiving –Air Can –Calve Open (NCM #_____)
□ Air - Can P -24 to -25 " - Flow Contr. Works (NCM#_____)
□ Air - Can P -24 to -25 " - Flow Contr. Faulty (NCM#_____)
□ Air - Can P Out -26" - Flow Contr. Works (NCM#_____)
□ Air - Can P Out -26" - Flow Contr. Faulty (NCM#_____)
□ Air - Can P Low -24 to -25 " - Grab Sample (NCM#_____)
□ Air - Can P Low -26 "- Grab Sample (NCM#_____)