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GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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May 14, 2014

Gavora, Inc.
246 Illinois Street, #3B
Fairbanks, Alaska 99707

Attn: Mr. Rudy Gavora

**RE: CRAWLSPACE AND INDOOR-AIR SAMPLING, SHOPPER'S FORUM MALL
ANNEX, 1255 AIRPORT WAY, FAIRBANKS, ALASKA**

This letter presents the results of crawlspace and indoor-air sampling we conducted in February 2014 in support of ongoing vapor-intrusion assessment (VIA) activities at the Shopper's Forum Mall Annex (Annex) in Fairbanks, Alaska. We conducted this VIA in partial fulfillment of the Alaska Department of Environmental Conservation (ADEC)'s requirements for site characterization and indoor-air mitigation. The objective of our services was to evaluate the effectiveness of mitigation efforts taken to improve indoor-air quality at the Annex. Our mitigation efforts include the installation of heat-recovery ventilators (HRVs) in the crawlspaces on the east end of the building; a vapor barrier installed in the crawlspaces; in-line granular activated carbon (GAC) filters installed in the building's ventilation system; an ADEC-supplied portable GAC filter; and a sub-slab depressurization system (SSDPS) installed in the western half of the Annex.

The purpose of this letter is to document our crawlspace and indoor-air sampling activities, and respond to the February 6, 2014 ADEC email correspondence regarding our *2013 Air Monitoring Report*. ADEC requested additional detail of mitigation activities and a table depicting which mitigation measures were active during air sampling events. Background information on the site and previous investigations is presented in our *2013 Air Monitoring Report* submitted January 2014, as well as in our July 2013 *Site Characterization and Vapor-Intrusion Monitoring Work Plan*. Sample locations were consistent with those from the 2011, 2012, and 2013 sampling events, where relevant. We conducted our sampling in general accordance with our July 2013 work plan and the ADEC Vapor Intrusion Guidance for Contaminated Sites (October 2012).

SCOPE OF SERVICES

To accomplish the objective, we performed the following services:

- collected two crawlspace air samples at the Annex;
- collected indoor-air samples in each of the Annex lease units; and
- prepared this letter report detailing our mitigation activities and analytical results.

This letter serves as a data report and does not include recommendations for cleanup.

Quarterly Air Monitoring

We began quarterly air monitoring of the crawlspaces under the eastern half of the Annex, as well as each indoor unit, in April 2013 with subsequent sampling events occurring in August 2013, November 2013, and February 2014. Sample locations are shown in Figures 1A through 1C. We used Summa canister (active) samplers in conjunction with Radiello[®] passive samplers during the April 2013 sampling event to validate the usage of passive samplers as an effective option for long-term crawlspace and indoor-air sampling events. We also conducted an interim sampling of Miguel's kitchen and office spaces in October 2013 following startup of the SSDPS, partly due to concern over elevated tetrachloroethene (PCE) levels observed during the August 2013 sampling event.

Once the SSDPS had been running for about a month, but prior to the November 2013 sampling event, Gavora, Inc. turned off ADEC's portable air filter in Miguel's office and removed the in-line carbon filters in the air-handling system. The portable GAC system in Miguel's office is still used at their discretion as an additional air quality mitigation measure. However, we requested the portable system be turned off prior to conducting indoor-air sampling events. This allowed us to evaluate effectiveness of mitigation measures (SSDPS, HRV, and crawlspace sealing).

During each quarterly sampling event, we collected air samples from the two crawlspaces (beneath Bamboo Panda and Fairbanks Fast Foto) and four indoor locations (in Fairbanks Fast Foto, Bamboo Panda, Miguel's kitchen, and Miguel's office). We expanded the sampling points in November 2013 to include Miguel's Banquet Room (formerly Curves) and analytical data was gathered from this sampling point during both the November 2013 and February 2014 sampling events. We collected the samples using Radiello[®] 130 passive samplers with 24-hour sample duration, placing the sampler in the breathing space (approximately 5-6 feet above the floor) in actively used portions of each unit; see Figures 1A through 1C for sample locations.

We submitted the samples to Eurofins Air Toxics, Ltd. (Air Toxics) in Folsom, California, for analysis of volatile organic compounds (VOCs); Air Toxics analyzed the Radiello[®] samplers using their in-house standard method.

Crawlspace sampling

For the February 2014 crawlspace-sampling event, we collected two samples: one from the crawlspace beneath Bamboo Panda (*Crawlspace_BP*), and one from the crawlspace beneath Fairbanks Fast Foto (*Crawlspace_FF*). The crawlspace is partitioned into two sections by a framed wall covered in Visqueen.

Indoor-Air Sampling

For the February 2014 indoor-air-sampling event, we collected five indoor-air samples and one quality control (QC) duplicate. We collected sample *Miguels_kitchen* from the pantry in Miguel's kitchen, *Miguels_officeA* and QC-duplicate *Miguels_officeB* from Miguel's office, *Miguels_Banquet Room* from the banquet space adjacent to main dining area in Miguel's, *Bamboo_Panda* from the kitchen of Bamboo Panda, and *FastFoto_office* from the office of Fairbanks Fast Foto.

ANNEX INDOOR-AIR QUALITY MITIGATION ACTIVITIES

In addition to the sampling tasks described above, we assisted Gavora, Inc.'s building manager in designing, implementing, and evaluating various aspects of the mitigation system, which we customized to fit the building's characteristics. The following timeline and subsections offer detail of the vapor-intrusion mitigation efforts and air-sampling events since Fall 2012:

- Fall 2012 – Crawlspace HRV installed in the partitioned sections of the crawlspace in the eastern half of the Annex. HRV startup occurred October 2012.
- Fall 2012 – Portable GAC filter installed at Miguel's Office.
- Fall 2012 – In-line GAC filters installed in the western half of the Annex.
- April 2013 – Sub-slab, crawlspace, indoor-air sampling using Summa canisters, and split-sampling of crawlspace and indoor locations using Radiello[®] passive samplers (in-line GAC filter and crawlspace HRV active; portable GAC inactive during sampling).

- July 2013 – Crawlspace vapor-barriers installed, additional sealing between units, sub-slab vacuum (transmistivity) testing for western half of Annex (Miguel's).
- August 2013 – Crawlspace and indoor-air sampling using Radiello[®] passive samplers (in-line GAC filters and crawlspace HRV active, portable GAC filter inactive during sampling).
- October 4, 2013 – SSDPS startup.
- October 10, 2013 – Interim indoor-air sampling at Miguel's using Radiello[®] passive samplers (SSDPS, crawlspace HRV, and in-line and portable GAC filters active during sampling).
- October 2013 – After the October 2013 interim indoor-air sampling event and prior to the November 2013 sampling event, Gavora, Inc. removed the in-line carbon filters from the air-handling system.
- November 5-6, 2013 – Crawlspace and indoor-air sampling using Radiello[®] passive samplers (SSDPS and crawlspace HRV active, portable GAC filter inactive during sampling).
- February 20-21, 2014 – Crawlspace and indoor-air sampling using Radiello[®] passive samplers (SSDPS and crawlspace HRV, portable GAC filter active during sampling).

Crawlspace HRV and Sealing

The purpose of the crawlspace HRV systems is to reduce contaminant concentrations through air exchange. A partitioned crawlspace is present at the eastern half of the Annex structure, measuring approximately 60 feet wide, 90 feet long and 4 feet high. The partitioning separates the crawlspace beneath the two eastern lease spaces with a Visqueen barrier, with each side having a separate HRV system. The design flow rate for the HRV systems is 50 cubic feet per minute (cfm), equivalent to approximately 28 crawlspace air-exchanges per day. These HRV systems were installed Fall 2012.

Results of analysis of air samples we collected in April 2013 showed that while crawlspace levels of PCE went down following installation of the HRV system (and are now below target levels), indoor-air concentrations of PCE remained above the indoor-air target levels. We attributed this to two factors: the absence of a vapor-barrier above and below the crawlspace, and the strong negative pressure in the Bamboo Panda unit caused by their kitchen ventilation hoods.

These two factors are being addressed by Gavora, Inc.; the strategy for addressing them is described in the following sections.

Following review of the April 2013 air-sampling results, we recommended Gavora, Inc. take additional measures to address vapor intrusion in the eastern half of the Annex. This included sealing the crawlspace. In July 2013, Gavora, Inc. installed a 10-mil Visqueen vapor barrier on the floor of the crawlspace, which was sealed to the foundation supports and utility penetrations with Tremco sealant and vapor-barrier tape. This was intended to impede vapor migration from the soil into the crawlspace air and increase the effectiveness of the HRV system.

Bamboo Panda Ventilation Controls

We also recommended Gavora, Inc. resolve the imbalance between the kitchen hoods in Bamboo Panda and the makeup air for these hoods. The restaurant's hoods draw a large amount of air, which results in a negative pressure differential relative to outdoor and crawlspace air. Ordinarily, makeup air is drawn from outdoors to compensate for this pressure differential. While a makeup-air system is present and functional, it requires pre-heating during the winter months to prevent excessively cold air being drawn into the lease space. It is our understanding that the tenant may avoid using the system during winter as a means of reducing the expense of pre-heating the makeup air. Gavora, Inc. has considered installing an automatic control on the system that would cause the makeup air to run whenever the hoods are in use, but to date has been prevented from doing so by conflicting coding regulations.

Indoor-Air Filtration

The purpose of the indoor-air filtration system is to reduce PCE and trichloroethene (TCE) concentrations in the indoor air of the lease spaces. The in-duct sorbent media filter was installed in the indoor-air recirculation system for the Annex lease spaces during Fall 2012. The sorbent media comprised a 50:50 combination by volume of potassium permanganate granular media and GAC, and was paired with a 0.1 micron particulate filter. Gavora, Inc. added a pre-filter to extend the life of the other filter media, which became rapidly clogged by dust and cigarette smoke from the bar. Sampling data suggested the in-line filters had limited effect on PCE and TCE concentrations in indoor air.

Sub-Slab Vacuum Testing Findings

On July 16 and 17, 2013 we conducted sub-slab vacuum testing at the western half of the Annex. We selected three vacuum test points based on their suitability for installation of permanent extraction points and proximity to suspected secondary source areas (septic lines). At each vacuum point we drilled a 1.5-inch hole through the slab and adapted a 6.5 horsepower shop-vacuum (190 peak CFM) to apply vacuum to the point. We used the three existing sub-slab sampling ports (SubSlabA, SubSlabB, and SubSlabC), as well as six additional 7/8-inch monitoring holes we drilled through the slab, as monitoring points where we measured vacuum using a magnehelic pressure gauge. For each vacuum point, we measured vacuum at the four closest monitoring points. See Figures 1A through 1C for locations of the monitoring and vacuum points.

Vacuum readings ranged from 0.18 to 0.34 inches water (in. H₂O) at the closest points, and <0.01 to 0.02 in. H₂O at the farthest points. We attempted smoke tracer testing at the first point with un-measurable vacuum; no smoke was drawn into the point, so the test was inconclusive. However, this point (M9) was close to the edge of the building, possibly too close to be affected by vacuum applied toward the center of the building. See Table 3 for vacuum readings and distances. The measurements suggested that the radius of influence of the shop-vac applied to the vacuum points is between 20 and 30 feet; this radius is expected to be larger for a continuously running sub-slab extraction fan. With permanent extraction fans located at the three locations selected for vacuum testing, coverage of most of the sub-slab area is achieved, and negative pressure beneath the slab is also achieved.

Building Visual PID Inspection

Also in July 2013, we conducted a building walk-through and used a photoionization detector (PID) to look for gaps, cracks, or other penetrations in the slab at Miguel's that could potentially allow soil-gas to enter the building interior. We encountered two locations where we had measurable (greater than 1 ppm) readings: one near the base of the door trim in Miguel's office (up to 120 ppm), and one at the transition between Miguel's main dining room and their private dining space (former Curves unit). We pointed these locations out to the Gavora, Inc. building manager, who inspected and sealed these locations after they completed the crawlspace work on the eastern half of the building. Sealing these possible penetrations prevented short-circuiting of the SSDPS and increased its effectiveness.

Sub-Slab Depressurization

This section describes the installation of the SSDPS in the western half of the Annex. Gavora, Inc. installed the system, subcontracting with ABC Inc., a Fairbanks-based building-ventilation subcontractor. Shannon & Wilson assisted by managing potentially contaminated soil excavated from the three subslab extraction points.

Three sub-slab extraction sumps were installed in close proximity to the three locations selected for vacuum testing (Figure 1A). Sumps were installed by coring 7-inch holes through the slab, then hand-digging soil beneath the slab to form a hole approximately 12 inches deep. Soil removed from these holes was temporarily stored in 5-gallon plastic buckets, and later combined with soil from soil borings and well installation for disposal. A 6-inch PVC pipe was installed in each hole and sealed with concrete and suitable non-shrinking grout.

An inline, centrifugal ventilation fan with a peak (unimpeded) flow rate exceeding that of our test vacuum (RadonAway RP265, 334 peak CFM), was installed in-line above each sump, with an exhaust stack extending through and above the Annex roof. The fans were hard wired to run continuously.

Mitigation System Assessment

The primary method of assessing performance of the mitigation systems described above has been through periodic indoor-air sample collection and analysis.

In our March 2013 work plan, we recommended procedures for measuring pressure differentials between air inside the building, below the slab, and outside the building over the course of ordinary operations, in varying weather conditions. Aside from measuring the pressure differential between the interior and sub-slab of Miguel's during vacuum testing (readings were <0.01 in. H₂O), we have not yet conducted this task. However, as recommended, during the Fall of 2013 Gavora, Inc, installed a system to allow periodic measurements of pressure differentials between each indoor unit, crawlspace, and sub-slab. The system includes small-diameter tubing that runs from each space to a central location in Miguel's utility room, with a sensor system that can be switched between lines. The system allows pressure measurements in the same low range as a magnehelic pressure gauge (0 to 1.0 in. H₂O). Pressure measurements will be used to tune the building's HVAC system to avoid strong negative pressures, and to monitor the performance of mitigation measures (SSDPS, HRV, and crawlspace sealing).

IDW Management and Disposal

Investigation-derived waste (IDW) generated from former dry-cleaning sites, such as soil and water generated during drilling and well installation and sampling, is regulated under the Resource Conservation and Recovery Act (RCRA). RCRA regulations define standards for waste characterization and management; elevated concentrations of PCE, TCE, and other contaminants may require IDW be classified as a RCRA hazardous waste. Hazardous wastes may be subject to more strict handling and disposal requirements than lower-risk wastes. We managed IDW generated during our field activities in accordance with applicable regulations.

A small amount of IDW was generated through installation of the sub-slab depressurization system and the in-line GAC system filters. The soil was containerized in a steel drum, homogenized, and is ready to be sampled for waste-characterization purposes. The used GAC filters will also be analyzed for waste-characterization purposes, and are currently being stored on-site. They will be disposed of in accordance with our work plan.

RESULTS

Analytical results of crawlspace and indoor-air samples collected in February 2014 are presented in Table 1 for PCE and TCE, the primary contaminants of potential concern (COPC). The table includes the ADEC target levels for Commercial Shallow Soil Gas Screening Levels (for crawlspace samples) and Commercial Indoor Air Screening Levels for comparison. The analytical sample results from the February 2014 sampling event show that PCE was present in all samples but at concentrations below ADEC Indoor-air or Shallow Gas Target Levels. TCE was not detected in the February 2014 samples. Table 2 presents a summary of PCE and TCE results from indoor-air and crawlspace samples collected from the Annex since 2011.

During the February 2014 sampling event, the portable GAC filter system was running; therefore, a low bias qualifier was reported in the data from samples *Miguels_officeA* and QC-duplicate *Miguels_officeB*. The portable GAC system was isolated within the office; in our opinion, data quality and usability of the other samples collected during this event are unaffected by the portable GAC-filter operation.

The target analyte list for the Passive S.E. RAD130/SKC analysis includes 26 volatile compounds. Sixteen compounds, including PCE, were detected in at least one sample collected in February 2014; a list of these compounds is included in a footnote to Table 1 and results are

documented in the laboratory report appended to this report. None of the detected non-target analytes were reported at concentrations exceeding their respective ADEC screening levels.

QUALITY ASSURANCE/QUALITY CONTROL

We conducted a QC/quality assurance (QA) review of the air-sample analytical data, including review of laboratory QC-sample results and our own QA assessment. Our assessment included consideration of sample-handling, analytical sensitivity, accuracy, precision, and completeness, as well as completion of an ADEC data-review checklist for each laboratory data report. The checklists and laboratory reports are appended to this report and provide additional details regarding our QA review. The following is a summary of data quality as it pertains to the target analytes for the VIA.

There were no sample-handling discrepancies identified by the laboratory, and the Radiello[®] 130 passive samplers were received in good condition. No analytes were detected in the method blanks. Reporting limits for each of the reported analytes were below ADEC target levels for target analytes. Laboratory control sample and duplicate (LCS/LCSD) recovery information showed the analyses were accurate. The laboratory did not present relative percent difference (RPD) calculations for the LCS/LCSD samples; however, RPD calculations for LCS/LCSD showed the analyses were precise, with the exception of hexane. The LCS/LCSD RPD for hexane is outside of acceptable limits, and each sample is considered affected for the analyte hexane and will be flagged accordingly. RPDs exceeded Data Quality Objectives (DQOs) of 25% for chloroform and cyclohexane in the field-sample duplicate pair *Miguels_OfficeA/Miguels_OfficeB*. Therefore, applicable qualifiers have been applied to the analytes chloroform and cyclohexane for the field-duplicate pair. See the attached Data Review Checklists for further detail.

No data were rejected as unusable and completeness objectives were met. Overall, data quality was acceptable, the results are considered representative of site conditions at the times, and locations they were collected.

DISCUSSION

Laboratory results indicate PCE concentrations in the crawlspaces beneath Bamboo Panda (73 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) and Fairbanks Fast Foto (42 $\mu\text{g}/\text{m}^3$) have been

significantly reduced by mitigation measures, and were below the ADEC indoor-air target level of $180 \mu\text{g}/\text{m}^3$. In addition, PCE concentrations in indoor-air samples collected from Bamboo Panda ($12 \mu\text{g}/\text{m}^3$), Fairbanks Fast Foto ($26 \mu\text{g}/\text{m}^3$), Miguel's Office ($34\text{JL} \mu\text{g}/\text{m}^3$), Miguel's Kitchen ($27 \mu\text{g}/\text{m}^3$), and Miguel's Banquet Room ($25 \mu\text{g}/\text{m}^3$) mirror this trend, and were below the ADEC indoor-air target level of $180 \mu\text{g}/\text{m}^3$ (with TCE below laboratory reporting limits). However, *Miguels_officeA* and QC-duplicate *Miguels_officeB* are considered biased low because the portable GAC system stationed in Miguel's office was running during the February 2014 sampling event. During prior sampling events, Miguel's was notified to disable the portable GAC system prior to conducting analytical indoor-air sampling activities. For future sampling events, we will continue to request the portable GAC system be turned off prior to sampling events to better assess the effectiveness of the other mitigation measures (SSDPS, HRV, and crawlspace sealing), and will verify that the BAC system has been off for at least 24 hours prior to sampling.

PCE and TCE concentrations in the western half of the Annex (Miguel's) prior to the October startup of the SSDPS were highly variable, with a dramatic spike in concentration in August 2013 (as high as $4,800 \mu\text{g}/\text{m}^3$ in Miguel's office). It is unclear what caused this spike, though it may have been a previously un-observed seasonal effect; no samples had been collected during summer in 2011 or 2012. However, following startup of the SSDPS, PCE concentrations fell to below ADEC target levels and TCE concentrations to below laboratory reporting limits. These lower levels were maintained through February 2014, despite discontinued use of the in-line GAC carbon filtration system.

At this time, statistical analysis of trends for each sampling location is not warranted. While there has been some decrease in concentrations for each unit, the statistical significance of possible trends may not be useful for decision-making. Trend analysis is ideal for systems where change is gradual over time, such as in natural attenuation of groundwater plumes; for systems where concentration is dramatically affected by variables such as operation of a SSDPS, and significant seasonal and building-pressure effects are expected, trends are not as relevant.

CONCLUSIONS

Various interim measures to improve indoor-air quality were implemented at the Annex in 2012. In 2013, several long-term mitigation measures were installed, including improved vapor-barrier

systems for the crawlspaces beneath the eastern half of the building and a SSDPS at the western half. Preliminary results indicate these long-term mitigation measures have been successful, achieving reductions of PCE and TCE concentrations to below ADEC target levels. We plan to continue long-term monitoring of indoor-air at the Annex, with quarterly sampling for the year following SSDPS startup (two sampling events remain). Upon completion of one year of monitoring, the mitigation-system effectiveness will be reevaluated, and a long-term maintenance and operations plan provided for the system.

LIMITATIONS

This report was prepared for the use of Gavora, Inc., and its representatives for evaluating crawlspace and indoor-air concentrations of chlorinated solvents at the Shopper's Forum Mall Annex building. This work presents our professional judgment as to the conditions at the building. The data presented in this report should not be construed as definite conclusions about crawlspace or indoor-air conditions in the area, and it is possible our tests will not represent the highest levels of contamination in the area. No other buildings were assessed for vapor intrusion as part of this investigation. We have not performed an independent evaluation of the accuracy or completeness of third-party information other than conducting analytical data-quality review, and shall not be responsible for errors or omissions contained in such information.

The results included in this report should be considered representative of the time and locations at which the sampling occurred. It was not the intent of our investigation to detect the presence of air or soil gas affected by contaminants other than those for which laboratory analyses were performed. No conclusions can be drawn on the presence or absence of other contaminants. The observed levels of contamination may be dependent on seasonal changes and the passage of time. Due to such changes, or others beyond our control, our observations and recommendations applicable to this site may need to be revised. If substantial time has elapsed between submission of this report and the start of activities or action based upon it, we recommend this report be reviewed to determine the applicability of the conclusions and recommendations considering the lapsed time or changed conditions.

This report was prepared for the exclusive use of our Client. All documents prepared by Shannon & Wilson are instruments of service with respect to the project for the sole use of our Client. Only our Client shall have the right to rely upon such documents. Such documents are not intended or represented to be suitable for reuse by our Client or others after the passage of time, on extensions of the project, or on any other project. Any such reuse without written verification or adaptation by Shannon & Wilson, as appropriate for the specific purpose intended, shall be at the user's sole risk.

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We are pleased to have this opportunity to assist you with this project. Please contact me or Chris Darrah if you have any questions.

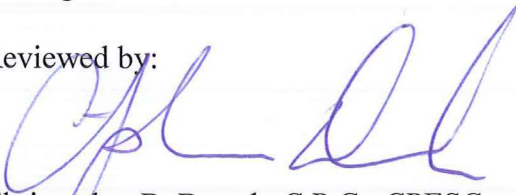
Sincerely,

SHANNON & WILSON, INC.



Seth Robinson
Geologist

Reviewed by:



Christopher B. Darrah, C.P.G., CPESC
Associate Geologist

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Enclosures: Table 1 – February 2014 Crawlspace and Indoor-Air Results
Table 2 – Historic Air-Sample Results, Crawlspace and Indoor Air
Table 3 – Sub-Slab Vacuum Measurements
Figure 1A – Sample Locations, Miguel's
Figure 1B – Sample Locations, Fast Foto
Figure 1C – Sample Locations, Bamboo Panda
Eurofins Air Toxics, Inc. Laboratory Data Reports (Work Order 1402467)
ADEC Laboratory Data Review Checklist

TABLE 1
FEBRUARY 2014 CRAWLSPACE AND INDOOR-AIR SAMPLE RESULTS, SHOPPER'S FORUM

Crawlspace		ADEC Shallow Soil Gas Target Level	Crawlspace Samples	
Analyte	Units		Crawlspace_FF	Crawlspace_BP
PCE	µg/m ³	1800	42	73
TCE	µg/m ³	88	<1.0	<1.0

Indoor Air		ADEC Indoor Air Target Level	Indoor Air Samples					
Analyte	Units		FastFoto_office	Bamboo_Panda	Miguels_office A	Miguels_office B (duplicate)	Miguels_kitchen	Miguels_Banquet Room
PCE	µg/m ³	180	26	12	32JL	34JL	27	25
TCE	µg/m ³	8.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Notes:

Samples analyzed using Radiello 130 samplers

PCE Tetrachloroethene

TCE Trichloroethene

JL Result is an estimated quantity and may be biased low

FF Fast Foto

BP Bamboo Panda

µg/m³ micrograms per cubic meter

The following non-target analytes were detected in one or more samples collected in February 2014, but at concentrations below their respective ADEC screening levels:

Ethanol, acetone, 2-propanol, hexane, cyclohexane, benzene, heptane, toluene, ethylbenzene, xylenes, and 1,4-dichlorobenzene.

The following analytes were tested for but not detected in the February 2014 indoor-air and crawlspace samples:

Methyl tert-butyl ether, 111-trichloroethane, carbon tetrachloride, 1,2-dichloroethane, 4-methyl-2-pentanone, chlorobenzene, styrene, propylbenzene, and naphthalene.

TABLE 2
 HISTORIC AIR-SAMPLE RESULTS
 CRAWLSPACE AND INDOOR AIR, SHOPPER'S FORUM

Sampling Location	Date	PCE	TCE	Active Air Quality Mitigation Systems				
		$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	Portable GAC	In-Line GAC	HRV	SSDPS	
Miguel's - Kitchen (indoor air)	April 2011	250E	1.6					
	February 2012	280J	1.7J					
	April 2013	260	1.8		x	x		
	August 2013	1,200	7.6		x	x		
	Sub-slab depressurization system startup, October 2013							
	October 2013	43	<1.0		x	x	x	
	November 2013	29	<1.0			x	x	
	February 2014	27	<1.0	x		x	x	
Miguel's - Office (indoor air)	February 2012	940	4.6					
	April 2013*	470	2.7	x	x	x		
	August 2013*	4,800	25	x	x	x		
	Sub-slab depressurization system startup, October 2013							
	October 2013	67	<1.0	x	x	x	x	
	November 2013*	47	<1.0	x		x	x	
	February 2014*	34JL	<1.0JL	x		x	x	
Miguel's - Banquet Room	April 2011	1,600^a	7.3			x		
	November 2013	45	<1.0			x	x	
	February 2014	25	<1.0	x		x	x	

TABLE 2
HISTORIC AIR-SAMPLE RESULTS
CRAWLSPACE AND INDOOR AIR, SHOPPER'S FORUM

Sampling Location	Date	PCE	TCE	Active Air Quality Mitigation Systems				
		$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	Portable GAC	In-Line GAC	HRV	SSDPS	
Bamboo Panda - Crawlspace	April 2011	2,000	9.8					
	February 2012	3,600	20					
	Crawlspace ventilation startup, October 2012							
	April 2013	1,400	7.1		x	x		
	August 2013	190	<0.94		x	x		
	November 2013	180	<1.0			x	x	
	February 2014	73	<1.0	x		x	x	
Bamboo Panda - Indoor Air	February 2012	730J	3.6J					
	Crawlspace ventilation startup, October 2012							
	April 2013	210	1.4		x	x		
	August 2013	5.3 ^b	<0.93		x	x		
	November 2013	27	<1.0			x	x	
	February 2014	12	<1.0	x		x	x	
Fairbanks Fast Foto - Crawlspace	April 2013	620	3.1		x	x		
	August 2013	120	<0.94		x	x		
	November 2013	90	<1.0			x	x	
	February 2014	42	<1.0	x		x	x	
Fairbanks Fast Foto - Indoor Air	February 2012	25	0.41					
	Crawlspace ventilation startup, October 2012							
	April 2013	260	1.6		x	x		
	August 2013	46	<0.93		x	x		
	November 2013	47	<1.0			x	x	
	February 2014	26	<1.0	x		x	x	
ADEC Shallow Soil Gas Target Level (for comparison to crawlspace data)		1,800	88					
ADEC Indoor-Air Target Level		180	8.8					

TABLE 2
HISTORIC AIR-SAMPLE RESULTS
CRAWLSPACE AND INDOOR AIR, SHOPPER'S FORUM

SHANNON & WILSON, INC.

Notes:

* Indicates a duplicate sample was collected at this location. The higher of the pair of sample results is reported here.

The Portable GAC was turned off at least 24 hours prior to conducting indoor-air sampling activities

^a Miguel's had not yet expanded into this unit at the time of the April 2011 sampling. The unit was closed off and was undergoing renovation.

^b The crawlspace hatch and back door to Bamboo Panda were found open upon sample retrieval.

E Result was above laboratory calibration range

J Result is considered estimated due to QC anomalies; see original QC checklists for details

JL Result is an estimated quantity and may be biased low; see original QC checklist for details

$\mu\text{g}/\text{m}^3$ micrograms per cubic meter

PCE Tetrachloroethene

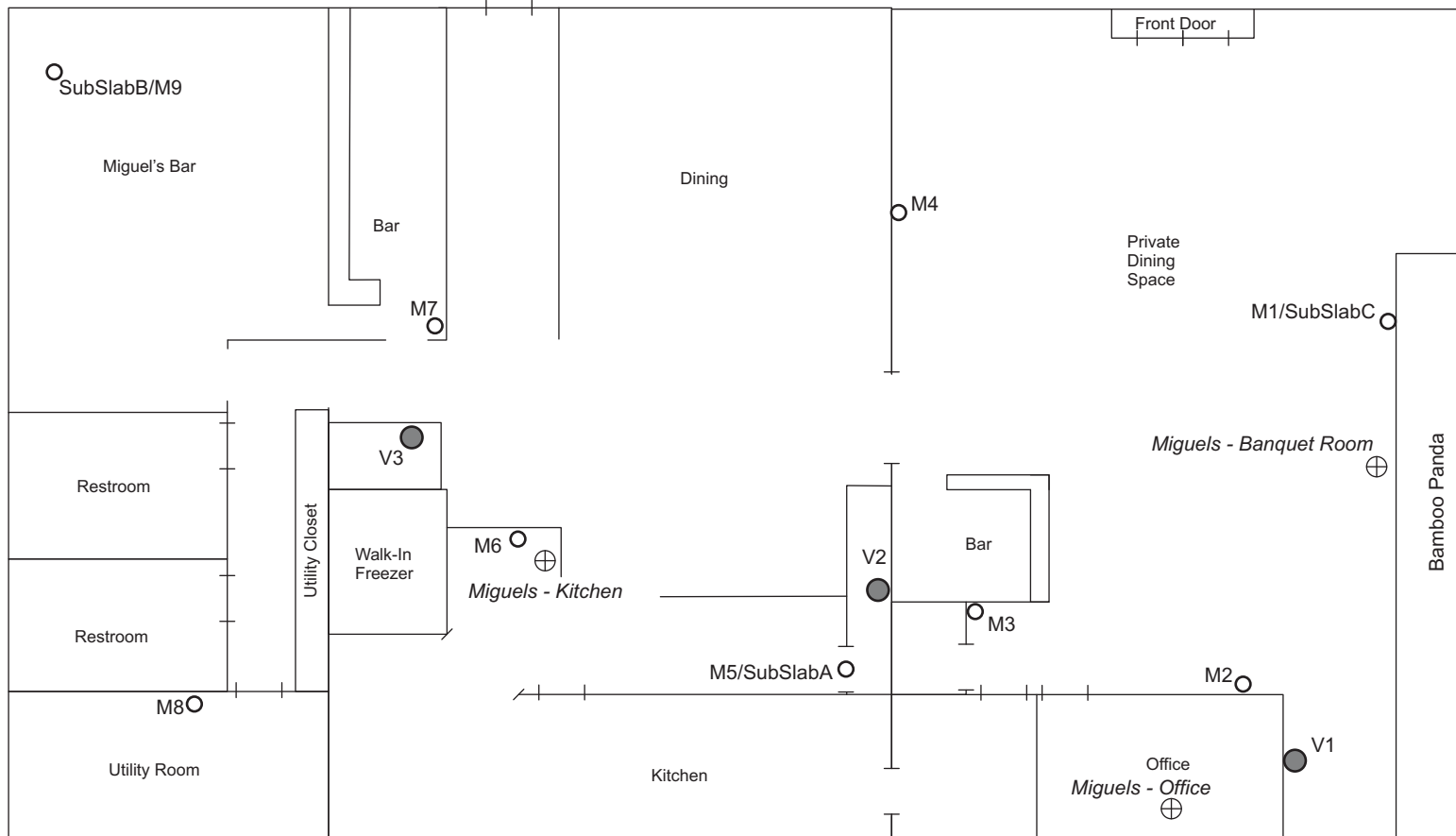
TCE Trichloroethene

GAC Granular activated carbon

HRV Heat recovery ventilation

SSDPS Sub-slab depressurization system

bold Result is above ADEC Target Level for commercial exposure scenarios.

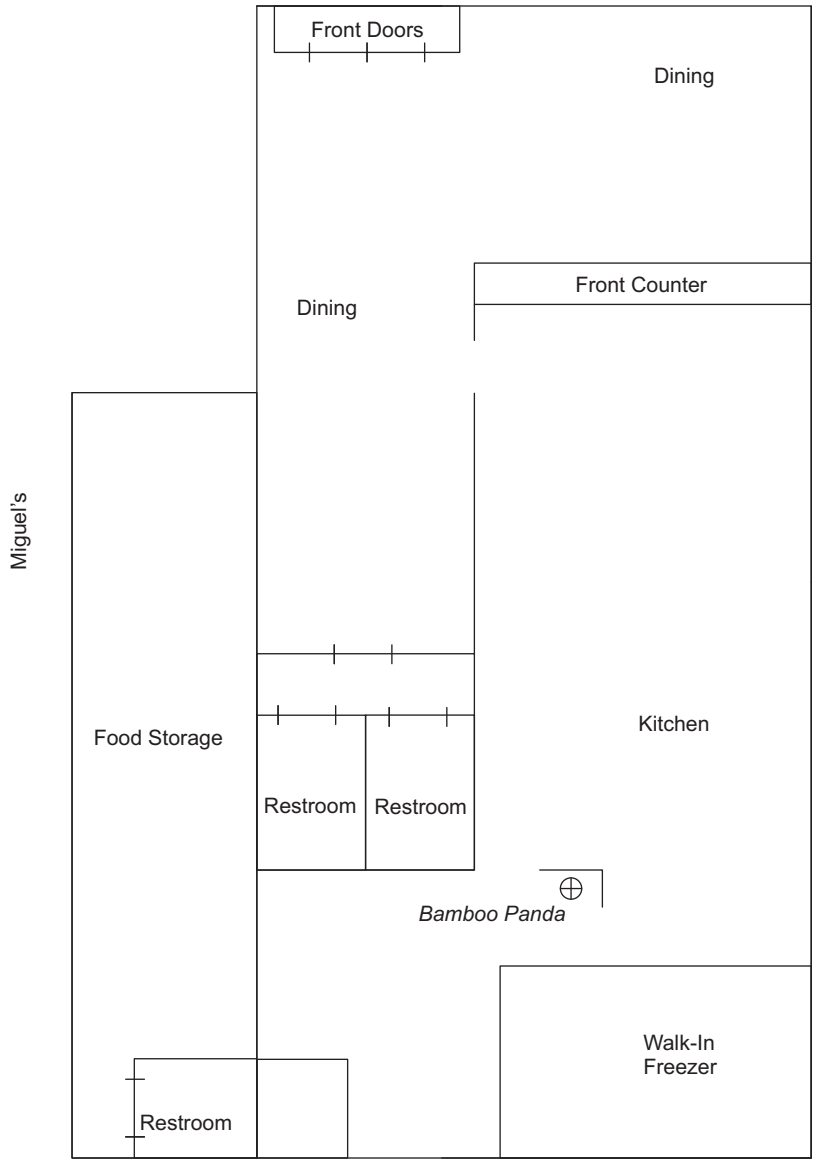


Not to Scale

Legend

- Sub-slab vacuum test port
- Sub-slab vacuum monitoring/sampling port
- ⊕ Approximate indoor-air sampling location

Shopper's Forum Fairbanks, Alaska	
SHOPPER'S FORUM ANNEX SAMPLE LOCATIONS, MIGUEL'S	
May 2014	31-1-11652-001
SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	Figure 1A




Miguel's

Fairbanks Fast Foto
 ↑
 N

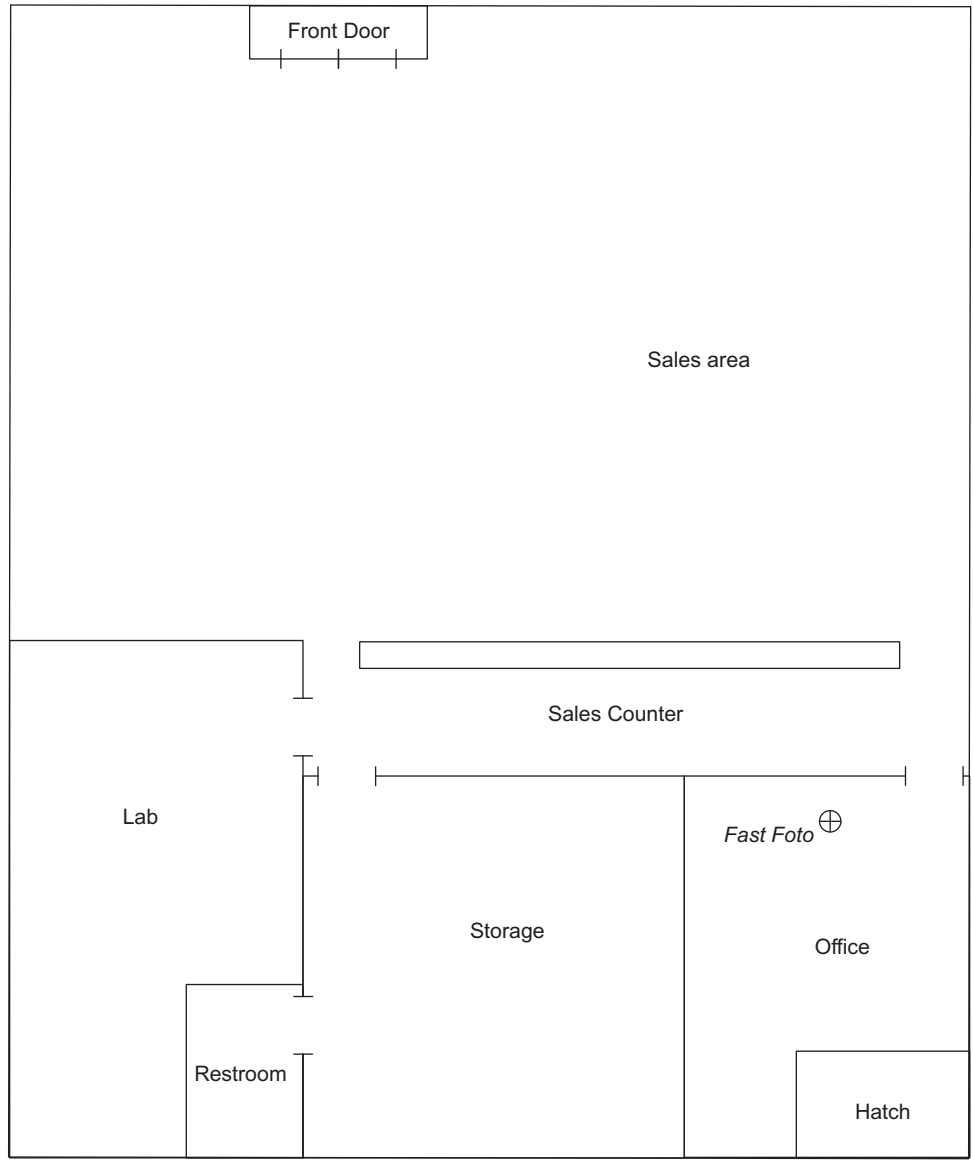
Legend

⊕ Approximate indoor-air sampling location

Not to Scale

Shopper's Forum Fairbanks, Alaska	
SHOPPER'S FORUM ANNEX SAMPLE LOCATIONS, BAMBOO PANDA	
May 2014	31-1-11652-001
 SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	Figure 1B

Bamboo Panda



Legend

⊕ Approximate indoor-air sampling location

Not to Scale

Shopper's Forum
Fairbanks, Alaska

**SHOPPER'S FORUM ANNEX
SAMPLE LOCATIONS, FAIRBANKS FAST FOTO**

May 2014

31-1-11652-001

3/13/2014

Mr. Rodney Guritz
Shannon & Wilson, Inc.
2355 Hill Road

Fairbanks AK 99709

Project Name: Shopper's Forum

Project #: 31-1-11652-001

Workorder #: 1402467

Dear Mr. Rodney Guritz

The following report includes the data for the above referenced project for sample(s) received on 2/27/2014 at Air Toxics Ltd.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Kelly Buettner
Project Manager

WORK ORDER #: 1402467

Work Order Summary

CLIENT:	Mr. Rodney Guritz Shannon & Wilson, Inc. 2355 Hill Road Fairbanks, AK 99709	BILL TO:	Mr. Rodney Guritz Shannon & Wilson, Inc. 2355 Hill Road Fairbanks, AK 99709
PHONE:	907-479-0600	P.O. #	
FAX:	907-479-5691	PROJECT #	31-1-11652-001 Shopper's Forum
DATE RECEIVED:	02/27/2014	CONTACT:	Kelly Buettner
DATE COMPLETED:	03/13/2014		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	Miguels_Office A	Passive S.E. RAD130/SKC
02A	Miguels_Office B	Passive S.E. RAD130/SKC
03A	Miguels_Banquet Room	Passive S.E. RAD130/SKC
04A	Miguels_Kitchen	Passive S.E. RAD130/SKC
05A	Bamboo Panda	Passive S.E. RAD130/SKC
06A	FastFoto_Office	Passive S.E. RAD130/SKC
07A	Crawlspace_FF	Passive S.E. RAD130/SKC
08A	Crawlspace_BP	Passive S.E. RAD130/SKC
09A	Lab Blank	Passive S.E. RAD130/SKC
10A	LCS	Passive S.E. RAD130/SKC
10AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY: 

 Technical Director

DATE: 03/13/14

LABORATORY NARRATIVE
Passive SE GC/MS
Shannon & Wilson, Inc.
Workorder# 1402467

Eight Radiello 130 (Solvent) samples were received on February 27, 2014. The laboratory extracted the charcoal sorbent bed of the passive sampler using carbon disulfide. An aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Sample concentrations were calculated using sampling rates provided by the manufacturer. These sampling rate values already take into account the desorption efficiency with carbon disulfide. As a result, the average concentration over the sampling duration is calculated from the mass of analyte measured and the exposure time without a correction factor. Results were calculated based on site temperature provided by the field sampler.

An exposure time of 1430 minutes and a temperature of 70 deg F was used to calculate concentrations for the Laboratory Blank.

The Relative Percent Difference (RPD) of the LCS/LCSD exceeded acceptance limits for Hexane.

Definition of Data Qualifying Flags

Nine qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Miguels_Office A

Lab ID#: 1402467-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	47	330
Acetone	0.20	1.9	0.84	7.9
2-Propanol	0.20	2.8	0.38	5.3
Hexane	0.10	1.1	0.16	1.7
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.10	0.93
Chloroform	0.10	0.96	0.14	1.3
Benzene	0.40	3.6	0.44	4.0
Toluene	0.10	0.97	0.76	7.4
Tetrachloroethene	0.10	1.2	2.6	32
Ethyl Benzene	0.10	1.0	0.11	1.2
m,p-Xylene	0.10	1.0	0.33	3.4
o-Xylene	0.10	1.1	0.12	1.4
1,4-Dichlorobenzene	0.10	1.4	0.42	5.9

Client Sample ID: Miguels_Office B

Lab ID#: 1402467-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	46	330
Acetone	0.20	1.9	0.95	8.8
2-Propanol	0.20	2.8	0.39	5.4
Hexane	0.10	1.1	0.16	1.7
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.10	0.94
Chloroform	0.10	0.96	0.19	1.8
Cyclohexane	0.10	1.3	0.11	1.5
Benzene	0.40	3.6	0.43	3.9
Toluene	0.10	0.97	0.80	7.7
Tetrachloroethene	0.10	1.2	2.8	34
Ethyl Benzene	0.10	1.0	0.12	1.2
m,p-Xylene	0.10	1.0	0.34	3.5
o-Xylene	0.10	1.1	0.12	1.4
1,4-Dichlorobenzene	0.10	1.4	0.44	6.2

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Miguels_Banquet Room

Lab ID#: 1402467-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.1	43	300
Acetone	0.20	1.9	0.90	8.4
2-Propanol	0.20	2.8	0.32	4.4
Hexane	0.10	1.1	0.12	1.3
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.10	0.93
Chloroform	0.10	0.96	0.13	1.2
Benzene	0.40	3.6	0.40	3.6
Toluene	0.10	0.97	0.62	6.0
Tetrachloroethene	0.10	1.2	2.0	25
m,p-Xylene	0.10	1.0	0.27	2.7
1,4-Dichlorobenzene	0.10	1.4	0.31	4.4

Client Sample ID: Miguels_Kitchen

Lab ID#: 1402467-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	47	330
Acetone	0.20	1.8	0.92	8.5
2-Propanol	0.20	2.7	0.27	3.7
Hexane	0.10	1.1	0.18	2.0
2-Butanone (Methyl Ethyl Ketone)	0.10	0.90	0.13	1.2
Chloroform	0.10	0.95	0.11	1.0
Benzene	0.40	3.6	0.56	5.0
Heptane	0.10	1.2	0.10	1.3
Toluene	0.10	0.96	0.98	9.4
Tetrachloroethene	0.10	1.2	2.2	27
Ethyl Benzene	0.10	1.0	0.15	1.5
m,p-Xylene	0.10	1.0	0.43	4.4
o-Xylene	0.10	1.1	0.16	1.7
1,4-Dichlorobenzene	0.10	1.4	0.63	8.8

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Bamboo Panda

Lab ID#: 1402467-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	100	710
Acetone	0.20	1.9	1.3	12
Hexane	0.10	1.1	0.17	1.8
Ethyl Acetate	0.40	3.7	0.57	5.2
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.21	1.9
Chloroform	0.10	0.96	0.24	2.3
Cyclohexane	0.10	1.3	0.11	1.5
Benzene	0.40	3.6	0.71	6.3
Heptane	0.10	1.2	0.18	2.2
Toluene	0.10	0.97	0.98	9.5
Tetrachloroethene	0.10	1.2	1.0	12
Ethyl Benzene	0.10	1.0	0.14	1.4
m,p-Xylene	0.10	1.0	0.37	3.8
o-Xylene	0.10	1.1	0.12	1.4

Client Sample ID: FastFoto_Office

Lab ID#: 1402467-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	27	190
Acetone	0.20	1.9	2.1	19
2-Propanol	0.20	2.8	1.5	21
Hexane	0.10	1.1	0.18	2.0
Ethyl Acetate	0.40	3.7	0.40	3.7
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.23	2.1
Chloroform	0.10	0.96	0.16	1.6
Cyclohexane	0.10	1.3	0.12	1.6
Benzene	0.40	3.6	0.47	4.2
Heptane	0.10	1.2	0.29	3.6
Toluene	0.10	0.97	2.5	24
Tetrachloroethene	0.10	1.2	2.1	26
Ethyl Benzene	0.10	1.0	0.14	1.5
m,p-Xylene	0.10	1.0	0.37	3.8

Summary of Detected Compounds VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: FastFoto_Office

Lab ID#: 1402467-06A

o-Xylene	0.10	1.1	0.12	1.3
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Client Sample ID: Crawlspace_FF

Lab ID#: 1402467-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	36	250
Acetone	0.20	1.8	1.3	12
2-Propanol	0.20	2.7	0.39	5.3
Hexane	0.10	1.1	0.16	1.8
2-Butanone (Methyl Ethyl Ketone)	0.10	0.90	0.22	1.9
Chloroform	0.10	0.95	0.20	1.9
Cyclohexane	0.10	1.3	0.12	1.6
Benzene	0.40	3.6	0.46	4.1
Heptane	0.10	1.2	0.16	2.0
Toluene	0.10	0.96	1.1	10
Tetrachloroethene	0.10	1.2	3.5	42
Ethyl Benzene	0.10	1.0	0.11	1.1
m,p-Xylene	0.10	1.0	0.29	2.9
o-Xylene	0.10	1.1	0.11	1.2

Client Sample ID: Crawlspace_BP

Lab ID#: 1402467-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	53	370
Acetone	0.20	1.8	1.2	12
2-Propanol	0.20	2.7	0.22	3.0
Hexane	0.10	1.1	0.22	2.4
2-Butanone (Methyl Ethyl Ketone)	0.10	0.90	0.30	2.7
Chloroform	0.10	0.95	0.30	2.9
Cyclohexane	0.10	1.3	0.12	1.7
Benzene	0.40	3.6	0.62	5.6
Heptane	0.10	1.2	0.21	2.6

Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS

Client Sample ID: Crawlspace_BP

Lab ID#: 1402467-08A

Toluene	0.10	0.96	1.1	10
Tetrachloroethene	0.10	1.2	6.0	73
Ethyl Benzene	0.10	1.0	0.13	1.4
m,p-Xylene	0.10	1.0	0.35	3.6
<u>o-Xylene</u>	<u>0.10</u>	<u>1.1</u>	<u>0.13</u>	<u>1.4</u>



Air Toxics

Client Sample ID: Miguels_Office A

Lab ID#: 1402467-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022813sim	Date of Collection:	2/21/14 3:10:00 PM
Dil. Factor:	1.00	Date of Analysis:	2/28/14 11:22 AM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	47	330
Acetone	0.20	1.9	0.84	7.9
2-Propanol	0.20	2.8	0.38	5.3
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.16	1.7
Ethyl Acetate	0.40	3.7	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.10	0.93
Chloroform	0.10	0.96	0.14	1.3
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	Not Detected	Not Detected
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.44	4.0
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	Not Detected	Not Detected
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.97	0.76	7.4
Tetrachloroethene	0.10	1.2	2.6	32
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	0.11	1.2
m,p-Xylene	0.10	1.0	0.33	3.4
o-Xylene	0.10	1.1	0.12	1.4
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.3	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	0.42	5.9
Naphthalene	0.10	2.9	Not Detected	Not Detected

Temperature = 70F , duration time = 1418 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130



Air Toxics

Client Sample ID: Miguels_Office B

Lab ID#: 1402467-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022814sim	Date of Collection:	2/21/14 3:15:00 PM
Dil. Factor:	1.00	Date of Analysis:	2/28/14 11:45 AM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	46	330
Acetone	0.20	1.9	0.95	8.8
2-Propanol	0.20	2.8	0.39	5.4
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.16	1.7
Ethyl Acetate	0.40	3.7	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.10	0.94
Chloroform	0.10	0.96	0.19	1.8
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	0.11	1.5
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.43	3.9
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	Not Detected	Not Detected
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.97	0.80	7.7
Tetrachloroethene	0.10	1.2	2.8	34
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	0.12	1.2
m,p-Xylene	0.10	1.0	0.34	3.5
o-Xylene	0.10	1.1	0.12	1.4
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	0.44	6.2
Naphthalene	0.10	2.9	Not Detected	Not Detected

Temperature = 70F , duration time = 1422 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130



Air Toxics

Client Sample ID: Miguels_Banquet Room

Lab ID#: 1402467-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022815sim	Date of Collection:	2/21/14 3:05:00 PM
Dil. Factor:	1.00	Date of Analysis:	2/28/14 12:09 PM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.1	43	300
Acetone	0.20	1.9	0.90	8.4
2-Propanol	0.20	2.8	0.32	4.4
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.12	1.3
Ethyl Acetate	0.40	3.7	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.10	0.93
Chloroform	0.10	0.96	0.13	1.2
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	Not Detected	Not Detected
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.40	3.6
1,2-Dichloroethane	0.10	0.94	Not Detected	Not Detected
Heptane	0.10	1.2	Not Detected	Not Detected
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.97	0.62	6.0
Tetrachloroethene	0.10	1.2	2.0	25
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	Not Detected	Not Detected
m,p-Xylene	0.10	1.0	0.27	2.7
o-Xylene	0.10	1.1	Not Detected	Not Detected
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.3	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	0.31	4.4
Naphthalene	0.10	2.9	Not Detected	Not Detected

Temperature = 70F , duration time = 1417 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130



Air Toxics

Client Sample ID: **Miguels_Kitchen**

Lab ID#: **1402467-04A**

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022816sim	Date of Collection: 2/21/14 3:18:00 PM
Dil. Factor:	1.00	Date of Analysis: 2/28/14 12:32 PM
		Date of Extraction: 2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	47	330
Acetone	0.20	1.8	0.92	8.5
2-Propanol	0.20	2.7	0.27	3.7
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.18	2.0
Ethyl Acetate	0.40	3.7	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.90	0.13	1.2
Chloroform	0.10	0.95	0.11	1.0
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	Not Detected	Not Detected
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.56	5.0
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	0.10	1.3
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.96	0.98	9.4
Tetrachloroethene	0.10	1.2	2.2	27
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	0.15	1.5
m,p-Xylene	0.10	1.0	0.43	4.4
o-Xylene	0.10	1.1	0.16	1.7
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	0.63	8.8
Naphthalene	0.10	2.8	Not Detected	Not Detected

Temperature = 70F , duration time = 1428 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

Client Sample ID: Bamboo Panda

Lab ID#: 1402467-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022817sim	Date of Collection:	2/21/14 3:20:00 PM
Dil. Factor:	1.00	Date of Analysis:	2/28/14 12:56 PM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	100	710
Acetone	0.20	1.9	1.3	12
2-Propanol	0.20	2.8	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.17	1.8
Ethyl Acetate	0.40	3.7	0.57	5.2
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.21	1.9
Chloroform	0.10	0.96	0.24	2.3
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	0.11	1.5
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.71	6.3
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	0.18	2.2
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.97	0.98	9.5
Tetrachloroethene	0.10	1.2	1.0	12
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	0.14	1.4
m,p-Xylene	0.10	1.0	0.37	3.8
o-Xylene	0.10	1.1	0.12	1.4
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	Not Detected	Not Detected
Naphthalene	0.10	2.9	Not Detected	Not Detected

Temperature = 70F , duration time = 1424 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130



Air Toxics

Client Sample ID: FastFoto_Office

Lab ID#: 1402467-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022818sim	Date of Collection:	2/21/14 3:21:00 PM
Dil. Factor:	1.00	Date of Analysis:	2/28/14 01:19 PM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	27	190
Acetone	0.20	1.9	2.1	19
2-Propanol	0.20	2.8	1.5	21
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.18	2.0
Ethyl Acetate	0.40	3.7	0.40	3.7
2-Butanone (Methyl Ethyl Ketone)	0.10	0.91	0.23	2.1
Chloroform	0.10	0.96	0.16	1.6
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	0.12	1.6
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.47	4.2
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	0.29	3.6
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.97	2.5	24
Tetrachloroethene	0.10	1.2	2.1	26
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	0.14	1.5
m,p-Xylene	0.10	1.0	0.37	3.8
o-Xylene	0.10	1.1	0.12	1.3
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.3	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	Not Detected	Not Detected
Naphthalene	0.10	2.9	Not Detected	Not Detected

Temperature = 70F , duration time = 1420 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130



Air Toxics

Client Sample ID: Crawlspace_FF

Lab ID#: 1402467-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022819sim	Date of Collection:	2/21/14 3:36:00 PM
Dil. Factor:	1.00	Date of Analysis:	2/28/14 01:43 PM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	36	250
Acetone	0.20	1.8	1.3	12
2-Propanol	0.20	2.7	0.39	5.3
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.16	1.8
Ethyl Acetate	0.40	3.6	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.90	0.22	1.9
Chloroform	0.10	0.95	0.20	1.9
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	0.12	1.6
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.46	4.1
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	0.16	2.0
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.96	1.1	10
Tetrachloroethene	0.10	1.2	3.5	42
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	0.11	1.1
m,p-Xylene	0.10	1.0	0.29	2.9
o-Xylene	0.10	1.1	0.11	1.2
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	Not Detected	Not Detected
Naphthalene	0.10	2.8	Not Detected	Not Detected

Temperature = 70F , duration time = 1430 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130



Air Toxics

Client Sample ID: Crawlspace_BP

Lab ID#: 1402467-08A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022820sim	Date of Collection:	2/21/14 3:33:00 PM
Dil. Factor:	1.00	Date of Analysis:	2/28/14 02:06 PM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	53	370
Acetone	0.20	1.8	1.2	12
2-Propanol	0.20	2.7	0.22	3.0
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	0.22	2.4
Ethyl Acetate	0.40	3.7	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.90	0.30	2.7
Chloroform	0.10	0.95	0.30	2.9
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	0.12	1.7
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	0.62	5.6
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	0.21	2.6
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.96	1.1	10
Tetrachloroethene	0.10	1.2	6.0	73
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	0.13	1.4
m,p-Xylene	0.10	1.0	0.35	3.6
o-Xylene	0.10	1.1	0.13	1.4
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	Not Detected	Not Detected
Naphthalene	0.10	2.8	Not Detected	Not Detected

Temperature = 70F , duration time = 1428 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130



Client Sample ID: Lab Blank

Lab ID#: 1402467-09A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022805sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	2/28/14 08:13 AM
		Date of Extraction:	2/28/14

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Ethanol	1.0	7.0	Not Detected	Not Detected
Acetone	0.20	1.8	Not Detected	Not Detected
2-Propanol	0.20	2.7	Not Detected	Not Detected
Methyl tert-butyl ether	0.10	1.1	Not Detected	Not Detected
Hexane	0.10	1.1	Not Detected	Not Detected
Ethyl Acetate	0.40	3.6	Not Detected	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.10	0.90	Not Detected	Not Detected
Chloroform	0.10	0.95	Not Detected	Not Detected
1,1,1-Trichloroethane	0.10	1.2	Not Detected	Not Detected
Cyclohexane	0.10	1.3	Not Detected	Not Detected
Carbon Tetrachloride	0.10	1.1	Not Detected	Not Detected
Benzene	0.40	3.6	Not Detected	Not Detected
1,2-Dichloroethane	0.10	0.93	Not Detected	Not Detected
Heptane	0.10	1.2	Not Detected	Not Detected
Trichloroethene	0.10	1.0	Not Detected	Not Detected
4-Methyl-2-pentanone	0.20	2.1	Not Detected	Not Detected
Toluene	0.10	0.96	Not Detected	Not Detected
Tetrachloroethene	0.10	1.2	Not Detected	Not Detected
Chlorobenzene	0.10	1.0	Not Detected	Not Detected
Ethyl Benzene	0.10	1.0	Not Detected	Not Detected
m,p-Xylene	0.10	1.0	Not Detected	Not Detected
o-Xylene	0.10	1.1	Not Detected	Not Detected
Styrene	0.10	1.2	Not Detected	Not Detected
Propylbenzene	0.10	1.2	Not Detected	Not Detected
1,4-Dichlorobenzene	0.10	1.4	Not Detected	Not Detected
Naphthalene	0.10	2.8	Not Detected	Not Detected

Temperature = 70F , duration time = 1430 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

Client Sample ID: LCS

Lab ID#: 1402467-10A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022803sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/28/14 07:27 AM
		Date of Extraction: 2/28/14

Compound	%Recovery	Method Limits
Ethanol	75	50-130
Acetone	98	70-130
2-Propanol	88	50-130
Methyl tert-butyl ether	109	70-130
Hexane	128	70-130
Ethyl Acetate	93	70-130
2-Butanone (Methyl Ethyl Ketone)	93	70-130
Chloroform	100	70-130
1,1,1-Trichloroethane	88	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	116	70-130
Benzene	100	70-130
1,2-Dichloroethane	88	70-130
Heptane	106	70-130
Trichloroethene	98	70-130
4-Methyl-2-pentanone	98	70-130
Toluene	95	70-130
Tetrachloroethene	97	70-130
Chlorobenzene	90	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	95	70-130
o-Xylene	78	70-130
Styrene	56	20-100
Propylbenzene	99	70-130
1,4-Dichlorobenzene	83	50-130
Naphthalene	8.2	5-100

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130



Client Sample ID: LCSD

Lab ID#: 1402467-10AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	10022804sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	2/28/14 07:50 AM
		Date of Extraction:	2/28/14

Compound	%Recovery	Method Limits
Ethanol	60	50-130
Acetone	86	70-130
2-Propanol	78	50-130
Methyl tert-butyl ether	100	70-130
Hexane	85	70-130
Ethyl Acetate	88	70-130
2-Butanone (Methyl Ethyl Ketone)	87	70-130
Chloroform	91	70-130
1,1,1-Trichloroethane	91	70-130
Cyclohexane	94	70-130
Carbon Tetrachloride	102	70-130
Benzene	91	70-130
1,2-Dichloroethane	88	70-130
Heptane	102	70-130
Trichloroethene	96	70-130
4-Methyl-2-pentanone	99	70-130
Toluene	92	70-130
Tetrachloroethene	92	70-130
Chlorobenzene	85	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	91	70-130
o-Xylene	84	70-130
Styrene	58	20-100
Propylbenzene	94	70-130
1,4-Dichlorobenzene	70	50-130
Naphthalene	6.7	5-100

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130

PASSIVE SAMPLE COLLECTION



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

**180 BLUE RAVINE ROAD, SUITE B
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Project Manager Seth Robinson
 Collected by: (Print and Sign) Seth Robinson
 Company Shannon & Wilson Email syw@shanwil.com
 Address 2355 Hill Road City Fairbanks State AK Zip 99709
 Phone 907-479-0600 Fax _____

Project Info:		Turn Around Time: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush specify _____	Reporting Units: <input type="checkbox"/> ppmv <input type="checkbox"/> ppbv <input checked="" type="checkbox"/> µg/m3 <input type="checkbox"/> mg/m3	Indoor Air	Outdoor Air	Workplace Monitoring	Other (Leave blank)
P.O. # _____	Project # <u>31-1-11652-001</u>						
Project Name <u>Shopper's Forum</u>							

Lab I.D.	Field Sample I.D. (Location)	Sampler #	Date of Deployment (mm/dd/yy)	Time of Deployment (hr:min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr:min)	Analysis Requested	Indoor Air	Outdoor Air	Workplace Monitoring	Other (Leave blank)
01A	Miguels-office A		02/20/14	1532	02/21/14	1510	VOCs (PCE, TCE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02A	miguels-office B		↓	1533	↓	1515	↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03A	Miguels-Banquet Room		↓	1528	↓	1505	↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04A	miguels kitchen		↓	1530	↓	1518	↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
05A	Bamboo Panda		↓	1536	↓	1520	↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06A	FastFoto-office		↓	1541	↓	1521	↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07A	Crawlspace - FF		↓	1546	↓	1536	↓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
08A	Crawlspace - BP		↓	1545	↓	1533	↓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Relinquished by: (signature) Date/Time <u>2/25/2014</u>	Received by: (signature) <u>my ATL</u> Date/Time <u>02/27/14 0955</u>	Sample Site Air Temperature: <u>~70° F</u>	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____		Notes: <u>Sample vials are labeled with Field Sample ID</u>
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____		

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	<u>Fedex</u>	<u>7980 2832 8686</u>	<u>NA</u>	<u>Good</u>	Yes No <u>None</u>	<u>1402467</u>

Laboratory Data Review Checklist For Air Samples

Completed by:

Title:

Date:

CS Report Name:

Report Date:

Consultant Firm:

Laboratory Name:

Laboratory Report Number:

ADEC File Number:

ADEC Hazard ID:

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

Yes No

Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

Yes No

Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No

Comments:

b. Correct analyses requested?

Yes No

Comments:

3. Laboratory Sample Receipt Documentation

a. Sample condition documented—Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No

Comments:

Samples were collected using Radiello 130 samplers.

b. If there were any discrepancies, were they documented? For example, incorrect sample containers, sample holding times outside of acceptable range, insufficient or missing samples, canister not holding a vacuum etc.?

Yes No

Comments:

There were no discrepancies; samples were received in good condition.

c. Data quality or usability affected? Explain.

Comments:

No; data quality and usability were not affected.

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

The case narrative identified the RPD of the LCS/LCSD exceeded acceptance limits for hexane. See LCS section for further detail.

c. Were all corrective actions documented?

Yes No

Comments:

N/A; no corrective action was required/performed.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

None, according to the case narrative. Due to the LCS/LCSD RPD failure for hexane, the detected hexane results will be flagged "J" for imprecision, and not detected results will be flagged with "UJ."

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No

Comments:

c. Are the data reported in micrograms per cubic meter volume ($\mu\text{g}/\text{m}^3$)?

Yes No

Comments:

d. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No

Comments:

PQLs (reporting limits) were compared to ADEC target levels. PQLs for not detected results were below target levels.

e. Data quality or usability affected? Explain.

Comments:

No; data quality and usability were not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Comments:

N/A; no method blanks contained detectable analytes.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

N/A; no method blanks contained detectable analytes.

v. Data quality or usability affected? Please Explain.

Comments:

No. Analytes were not detected in the method blank; data quality and usability were unaffected.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

iii. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

The laboratory analyzed LCS and LCSD samples; however, RPDs are not presented in the laboratory report. The case narrative did note that the RPD of the LCS/LCSD exceeded acceptance limits for hexane. With the exception of hexane, the results are considered precise.

iv. If %R or RPD is outside of acceptable limits, what samples are affected?

The LCS/LCSD RPD for hexane is outside of acceptable limits for samples from WO 1402467. Each of the samples is considered affected for the analyte hexane and will be flagged with a “J” qualifier for detected results and “UJ” for non-detect results.

Comments:

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

Yes; see above.

vi. Data quality or usability affected? Explain.

Comments:

Yes; see above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – QC and laboratory samples?

Yes No

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits?
And project specified DQOs, if applicable.

Yes No

Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

N/A

iv. Data quality or usability affected? Explain.

Comments:

No; data quality and usability were unaffected.

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 soil gas or indoor air samples?

Yes No

Comments:

Field-duplicate sample pair *Miguels_Office A/Miguels_Office B* was collected and reported in this work order.

ii. Submitted blind to lab?

Yes No

Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs?
(Recommended: 25 %)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No

Comments:

RPDs exceeded DQOs of 25% for chloroform and cyclohexane in the field-sample duplicate pair *Miguels_Office A/Miguels_Office B*.

iv. Data quality or usability affected? Explain.

Yes No

Comments:

Yes; a “J” qualifier for detected results and a “UJ” for non-detect results has been applied for the analytes chloroform and cyclohexane in the field-duplicate *Miguels_Office A/Miguels_Office B*.

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No

Comments:

N/A; there were no other flags.