Technical Memorandum

To: Lynn Nakashima, Department of Toxic Substances Control (DTSC) (Electronic Format Only)
From: Andrew Romolo, P.G.; Terraphase Engineering
Wendy Bellah, P.E.; Terraphase Engineering
cc: Charles Elmendorf, Zeneca Inc.;
William Marsh, Esq., Edgcomb Law Group;
Klaus Rohwer, P.G.; Equipoise Corporation
Karl Hans, University of California
Date: April 12, 2017
Subject: Sub-Slab Vapor Monitoring, Building 478, Berkeley Global Campus at Richmond Bay, Richmond Field Station Site, Richmond, California

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Terraphase Engineering Inc. (Terraphase) has prepared this technical memorandum on behalf of Zeneca Inc. to transmit the sub-slab vapor sample analytical results collected at Building 478, located at the Berkeley Global Campus at Richmond Bay (BGC), Richmond Field Station Site (RFS), in Richmond, California. The BGC is located adjacent to and west of the former Zeneca property now known as Campus Bay. To assess the potential migration pathway to sub-slab vapor for volatile organic compounds (VOCs) detected in groundwater at PZ-12 (Figure 1), a Vapor Pin™ sampling device was installed at Building 478 to provide access for the collection of sub-slab vapor samples for chemical analysis. As discussed in the January 11, 2017 Terraphase Technical Memorandum, "Revised Sub-Slab Vapor Monitoring, Building 478, Berkeley, Global Campus at Richmond Bay, Richmond Field Station Site, Richmond, California" (the "Technical Memorandum"), an initial sub-slab vapor sample was collected on June 2, 2016. The Technical Memorandum included an assessment of the risk of VOC concentrations detected in the sub slab vapor sample to indoor air receptors and concluded that the cancer risk and hazard index did not require additional assessment of indoor air. In a letter dated October 11, 2016, the Department of Toxic Substances Control (DTSC) required that an additional sub-slab vapor sample be collected to represent wet season conditions.

Terraphase collected the additional sub slab vapor sample from the Vapor Pin™ monitoring location (Figure 1) on January 31, 2017. The sampling was completed in accordance with Terraphase's work plan dated April 26, 2016 titled, "Building 478 Sub-Slab Vapor Monitoring, Berkeley Global Campus at Richmond Bay, Richmond Field Station Site, Richmond, California" ("the Work Plan"). The DTSC

conditionally approved the Work Plan in a letter dated May 19, 2016. In accordance with the 2015 DTSC, "Advisory Active Soil Gas Investigations" (the "Advisory"), the sampling activities did not occur during a rain event and a storm front producing a significant rain event (defined by the Advisory as a ½ inch of rain or greater over a 24-hour period) did not pass through the area of the BGC for the five days prior to January 31, 2017.

In accordance with the procedures described in the DTSC approved Work Plan, sampling was conducted under a clear shroud. The air inside the shroud was enriched with helium to a minimum concentration of 20 percent by volume to serve as a tracer gas for assessing leaks along the sampling manifold and connection to the Vapor Pin™. Helium concentrations recorded during sampling are recorded on the field sampling sheet provided in Attachment 1 to this Technical Memorandum. The sample canister was fitted with a flow regulation device sized to restrict the sample collection flowrate between approximately 100 to 200 milliliters per minute.

The samples were shipped to Eurofins Air Toxics Laboratory (Eurofins) under chain of custody (COC) protocols. The COCs provided with the samples are included in Attachment 2 to this Technical Memorandum. In accordance with the Work Plan, the samples were analyzed for the following VOCs:

- Vinyl Chloride
- Trans-1,2-Dichloroethene
- Cis-1,2-Dichloroethene
- Trichloroethene (TCE)
- Tetrachloroethene (PCE)

The above VOCs were analyzed by Eurofins using Environmental Protection Agency (EPA) Method TO-15 modified for low level detection.

Results

The VOCs analyzed were not detected above laboratory reporting limits in the primary and duplicate samples. Helium was not detected in either sample above laboratory reporting limits, thereby validating that the sampling apparatus was air tight. The results from the vapor pin sampling are summarized in Table 1 and includes the June 2016 sampling results for reference. The laboratory analytical data for the January 2017 sampling is provided in Attachment 2 to this Technical Memorandum.

As compared to the previous sample collected, PCE concentrations decreased from 2.8 micrograms per cubic meter ($\mu g/m^3$) in the sample collected on June 2, 2016 to less than the detection limit (1.6 $\mu g/m^3$) in the sample collected on January 31, 2017 (refer to Table 1). Based on the analytical data for the samples collected during the two sampling events, no further assessment of the groundwater to indoor air migration pathway is warranted at this time. The Vapor Pin™ sampling device will remain in place in the event that future environmental conditions warrant additional sub slab vapor evaluations.

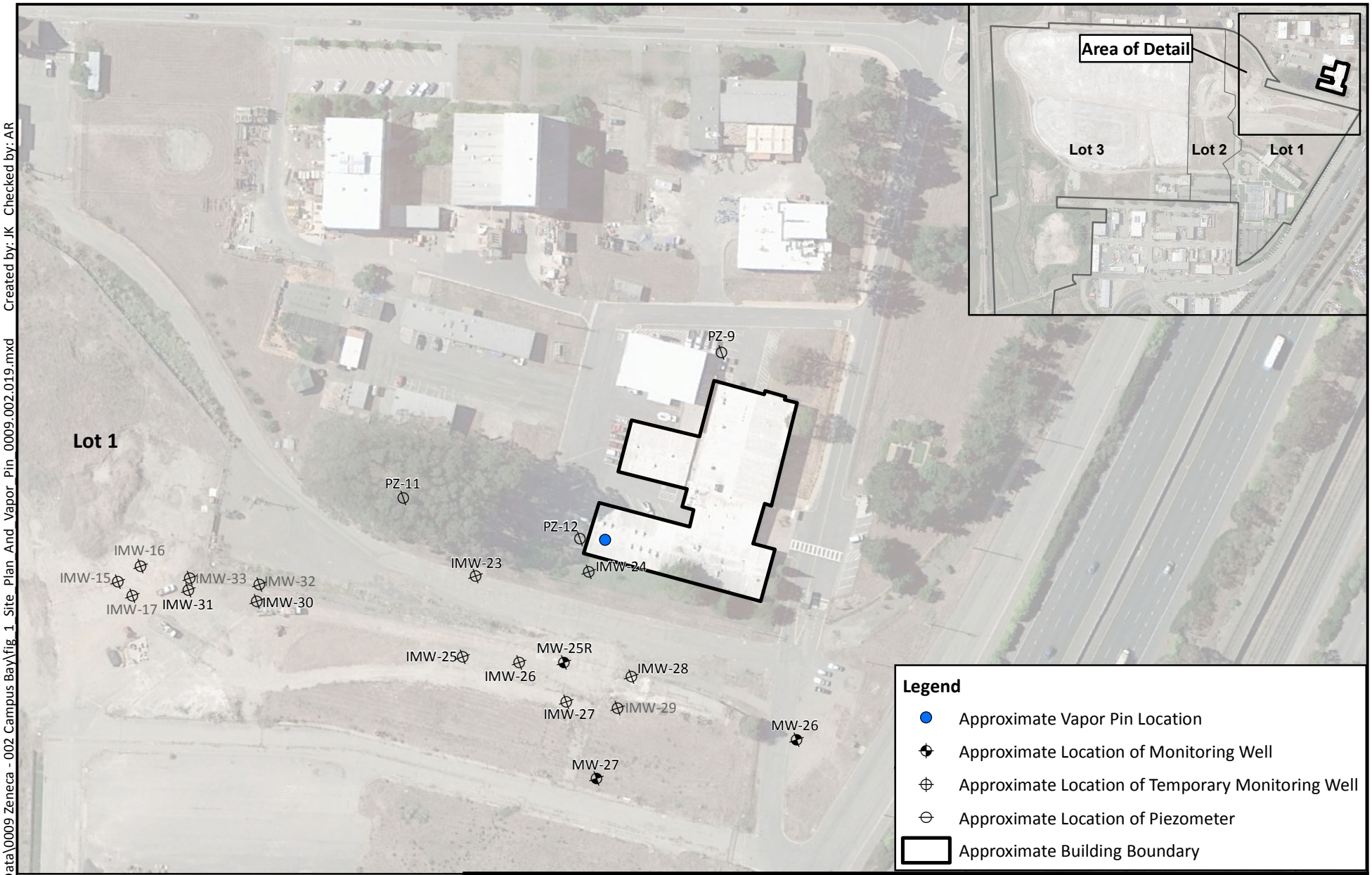
Attachments:

Table 1: Summary of Vapor Pin Sampling Results
Figure 1: Site Plan with Approximate Vapor Pin Location
Attachment 1: Field Sampling Data Sheet
Attachment 2: Laboratory Analytical Data with Chain of Custody

Table 1
Summary of Vapor Pin Sampling Results
Building 478, Berkeley Global Campus at Richmond Bay
Richmond, California

	Sample Date	cis-1,2-Dichloroethene ug/m^3	trans-1,2-Dichloroethene ug/m^3	Tetrachloroethene ug/m^3	Trichloroethene ug/m^3	Toluene ug/m^3	Vinyl Chloride ug/m^3	Helium %
BGC-478	6/2/2016	<1.0	<1.0	**2.5**	<1.4	<1.0	<0.68	<0.13
BGC-478 dup	6/2/2016	<0.88	<0.88	**2.8**	<1.2	<0.83	<0.56	<0.11
BGC-478	1/31/2017	<0.93	<0.93	<1.6	<1.3	<0.88	<0.60	<0.12
BGC-478 dup	1/31/2017	<0.93	<0.93	<1.6	<1.2	<0.88	<0.60	<0.12

Notes:
ug/m^3 = micrograms per cubic meter



File: J:\GIS Backup\GIS Data\0009 Zeneca - 002 Campus Bay\Fig_1 Site Plan And Vapor Pin 0009.002.019.mxd Created by: JK Checked by: AR

Aerial imagery captured on 10/1/2009 (Google, 2010)

SAFETY FIRST

terraphase engineering

CLIENT:	Zeneca, Inc.
PROJECT:	Campus Bay Richmond, CA
PROJECT NUMBER:	0009.002.023

Site Plan with Approximate Vapor Pin Location

FIGURE 1

ATTACHMENT 1

Field Sampling Data Sheet

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Soil Gas Field Log

terraphase engineering

Project Name: CAMPUS BAY UC Vapor Pin

Date: 1/31/17 Page 1 of 1

Project Number: 0009.002.036

Site Location: Richmond CA

Sampled by: KIRBY FERNANDO

Weather Conditions:

Sample ID	Manifold #	Canister #	Sample Start Pressure	Sample End Pressure	Comments:
BGC-478	21912	1L1742	-30	-5	
Leak Check Start Time	**Leak Check Start Pressure**	**Leak Check End Time**	**Leak Check End Pressure**	**Satisfy Leak Check (Y/N)**	
0905	-30	915	-30	Y	
Purge Start Time	**Purge End Time**	**Volume Purged**	**% Helium in Shroud**	**% Helium in Purge Line**	
0920	0921	60 mL	NA	NA	

Sample Start Time	Time Elapsed (min)	Helium %	SUMA Pressure (in HG)
0941	0	24.0	-30
	1	23.7	-28
	2	25.2	-25
	3	25.1	-23
	4	24.8	-20
	5	25.1	-17
	6:41	25.5	-15
	7	25.5	-14
	8	25.2	-13
	9	25.3	-11
	10	25.7	-10
	11	25.9	-8
	12	26.5	-7
	13	25.4	-6
	14:10	24.8	-5

Time Elapsed (min)	Helium %	SUMA Pressure (in HG)	Sample End Time
14:10	24.8	-5	~~14:10~~ (TB) 09:55

BGC-475-

Sample ID	Manifold #	Canister #	Sample Start Pressure	Sample End Pressure	Comments: Same as above
DUP	21912	37394	-30	-5	Sample & through a duplicate sampling "T"
Leak Check Start Time	**Leak Check Start Pressure**	**Leak Check End Time**	**Leak Check End Pressure**	**Satisfy Leak Check (Y/N)**	
Purge Start Time	**Purge End Time**	**Volume Purged**	**% Helium in Shroud**	**% Helium in Purge Line**	

Sample Start Time	Time Elapsed (min)	Helium %	SUMA Pressure (in HG)

Time Elapsed (min)	Helium %	SUMA Pressure (in HG)	Sample End Time

ATTACHMENT 2

Laboratory Analytical Data with Chain of Custody

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2/13/2017
Mr. Chris Jones
Terraphase Engineering Inc.
1404 Franklin Street
Suite 600
Oakland CA 94612

Project Name: UC Vapor Pin
Project #: 0009.002.036
Workorder #: 1702018A

Dear Mr. Chris Jones

The following report includes the data for the above referenced project for sample(s) received on 2/1/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1702018A

Work Order Summary

CLIENT:	Mr. Chris Jones Terraphase Engineering Inc. 1404 Franklin Street Suite 600 Oakland, CA 94612	**BILL TO:**	Mr. Andrew Romolo Terraphase Engineering Inc. 1404 Franklin Street Suite 600 Oakland, CA 94612
PHONE:	510-645-1850 x48	**P.O. #**	
FAX:		**PROJECT #**	0009.002.036 UC Vapor Pin
DATE RECEIVED:	02/01/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	02/13/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BGC-478	Modified TO-15	4.3 "Hg	14.9 psi
02A	BGC-478-Dup	Modified TO-15	4.1 "Hg	15 psi
03A	Lab Blank	Modified TO-15	NA	NA
04A	CCV	Modified TO-15	NA	NA
05A	LCS	Modified TO-15	NA	NA
05AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 02/13/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Terraphase Engineering Inc.
Workorder# 1702018A

Two 1 Liter Summa Canister (100% Certified) samples were received on February 01, 2017. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
Initial Calibration	</=30% RSD with 2 compounds allowed out to < 40% RSD	</=30% RSD with 4 compounds allowed out to < 40% RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight 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, LOD, or MDL value. See data page for project specific U-flag definition.

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

N - The identification is based on presumptive evidence.

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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: BGC-478

Lab ID#: 1702018A-01A

No Detections Were Found.

Client Sample ID: BGC-478-Dup

Lab ID#: 1702018A-02A

No Detections Were Found.

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Client Sample ID: BGC-478

Lab ID#: 1702018A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20020707**	**Date of Collection: 1/31/17 9:41:00 AM**	
Dil. Factor:	**2.35**	**Date of Analysis: 2/7/17 02:17 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.24	Not Detected	0.60	Not Detected
trans-1,2-Dichloroethene	0.24	Not Detected	0.93	Not Detected
cis-1,2-Dichloroethene	0.24	Not Detected	0.93	Not Detected
Trichloroethene	0.24	Not Detected	1.3	Not Detected
Tetrachloroethene	0.24	Not Detected	1.6	Not Detected
Toluene	0.24	Not Detected	0.88	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	127	70-130

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Client Sample ID: BGC-478-Dup

Lab ID#: 1702018A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20020708**	**Date of Collection: 1/31/17 9:41:00 AM**	
Dil. Factor:	**2.34**	**Date of Analysis: 2/7/17 03:09 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.23	Not Detected	0.60	Not Detected
trans-1,2-Dichloroethene	0.23	Not Detected	0.93	Not Detected
cis-1,2-Dichloroethene	0.23	Not Detected	0.93	Not Detected
Trichloroethene	0.23	Not Detected	1.2	Not Detected
Tetrachloroethene	0.23	Not Detected	1.6	Not Detected
Toluene	0.23	Not Detected	0.88	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	128	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1702018A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20020706**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/17 01:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	117	70-130

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Client Sample ID: CCV

Lab ID#: 1702018A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20020703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/17 10:20 AM**	

Compound	**%Recovery**
Vinyl Chloride	74
trans-1,2-Dichloroethene	87
cis-1,2-Dichloroethene	87
Trichloroethene	102
Tetrachloroethene	104
Toluene	92

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	127	70-130

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Client Sample ID: LCS

Lab ID#: 1702018A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20020704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/17 11:22 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	77	70-130
trans-1,2-Dichloroethene	97	70-130
cis-1,2-Dichloroethene	79	70-130
Trichloroethene	104	70-130
Tetrachloroethene	110	70-130
Toluene	94	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	129	70-130

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Client Sample ID: LCSD

Lab ID#: 1702018A-05AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20020705**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/7/17 12:12 PM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	75	70-130
trans-1,2-Dichloroethene	94	70-130
cis-1,2-Dichloroethene	79	70-130
Trichloroethene	103	70-130
Tetrachloroethene	107	70-130
Toluene	93	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	125	70-130

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2/14/2017
Mr. Chris Jones
Terraphase Engineering Inc.
1404 Franklin Street
Suite 600
Oakland CA 94612

Project Name: UC Vapor Pin
Project #: 0009.002.036
Workorder #: 1702018B

Dear Mr. Chris Jones

The following report includes the data for the above referenced project for sample(s) received on 2/1/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1702018B

Work Order Summary

CLIENT:	Mr. Chris Jones Terraphase Engineering Inc. 1404 Franklin Street Suite 600 Oakland, CA 94612	**BILL TO:**	Mr. Andrew Romolo Terraphase Engineering Inc. 1404 Franklin Street Suite 600 Oakland, CA 94612
PHONE:	510-645-1850 x48	**P.O. #**	
FAX:		**PROJECT #**	0009.002.036 UC Vapor Pin
DATE RECEIVED:	02/01/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	02/14/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BGC-478	Modified ASTM D-1946	4.3 "Hg	14.9 psi
02A	BGC-478-Dup	Modified ASTM D-1946	4.1 "Hg	15 psi
03A	Lab Blank	Modified ASTM D-1946	NA	NA
04A	LCS	Modified ASTM D-1946	NA	NA
04AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 02/14/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
Terraphase Engineering Inc.
Workorder# 1702018B

Two 1 Liter Summa Canister (100% Certified) samples were received on February 01, 2017. The laboratory performed analysis via Modified ASTM Method D-1946 for Helium in air using GC/TCD. The method involves direct injection of 1.0 mL of sample.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
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 detection limit.
M - Reported value may be biased due to apparent matrix interferences.
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

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: BGC-478

Lab ID#: 1702018B-01A

No Detections Were Found.

Client Sample ID: BGC-478-Dup

Lab ID#: 1702018B-02A

No Detections Were Found.

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Client Sample ID: BGC-478

Lab ID#: 1702018B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10021123c**	**Date of Collection: 1/31/17 9:41:00 AM**	
Dil. Factor:	**2.35**	**Date of Analysis: 2/11/17 09:36 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: BGC-478-Dup

Lab ID#: 1702018B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10021124c**	**Date of Collection: 1/31/17 9:41:00 AM**	
Dil. Factor:	**2.34**	**Date of Analysis: 2/11/17 10:04 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: Lab Blank

Lab ID#: 1702018B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10021104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/17 04:30 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1702018B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10021102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/10/17 03:43 PM**	

Compound	%Recovery	Method Limits
Helium	102	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1702018B-04AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10021125**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/11/17 10:37 AM**	

Compound	%Recovery	Method Limits
Helium	102	85-115

Container Type: NA - Not Applicable

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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
FOLSOM, CA 95630-4719
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Project Manager ANDY ROMOLO

Collected by: (Print and Sign) KIRBY FERNANDEZ

Company TERRAPHASE Email andrew.romolo@terraphase.com

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Project Info:
P.O. #
Project # 0009.002.036
Project Name UC Vapor Pin

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	BGC-478	1L1742	1/31/17	0941		30	5		
02A	BGC-478-DUP	37394	1/31/17	0941		30	5		

Relinquished by: (signature) Date/Time 01/31/17 1400
Received by: (signature) Date/Time Alex Bleier GATL 2/1/17 1030

Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Notes: TO-15 (Low Level) for the following analytes only: Vinyl Chloride, Toluene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Trichloroethene, Tetrachloroethene, and Helium by ASTM D1946

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		NA	Good	Yes No None	1702018

Form 1293 rev.11