

June 5, 2017

Keith Nowell, PG, CHG  
Department of Environmental Health  
Local Oversight Program (LOP) For Hazardous Materials Releases  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94503

RE: Screening Subslab Vapor Survey  
6251, 6253, and 6255 College Avenue, 305 and 307 63<sup>rd</sup> Street  
Oakland, California

Dear Mr. Nowell:

The following screening subslab vapor survey (“Survey”) summary is provided by EnviroAssets Inc. (“EnviroAssets”) on behalf of Visilios D. Bouzos and Eleni V. Bouzos, individually and as trustee of the Bouzos Family Living Trust (collectively, “Bouzos”). The Survey was conducted at the property with the above listed addresses (“Property”, Figure 1) following the meeting with the Alameda County Department of Environmental Health (“ACDEH”) on May 24, 2017, and in response to its letter dated that same day in which the ACDEH expressed that its “primary concern is the potential health risk due to exposure from VOCs via vapor intrusion to indoor air”. This concern is due to the potential impacts from volatile organic compounds, specifically chlorinated solvents (“CVOCs”), from historical dry cleaning operations both on and in the vicinity of the Property.

## **1.0 BACKGROUND**

The Property is an approximately 0.7 acre parcel (APN 48A-7069-7) zoned for mixed use and developed with commercial spaces on the first floor and residential apartments on the second and third floors. The Property building footprint is approximately 2500 square feet (sf). Currently, the Property is undergoing a voluntary seismic retrofit that involves structural improvements to foundations and first story framing members. The updated foundation plan is overlain on an aerial photograph in Figures 1 and 2.

Retrofit of 6251 College Avenue has been completed space is occupied by a nail spa business. Retrofit is underway in 6253 and 6255 College Avenue spaces where the perimeter and slab foundations have been retrofit and rough interior work is underway. Approximately 5-inch thick concrete foundations were poured over approximately 4-inches of gravel and two inches of sand with a moisture barrier separating the gravel and sand materials. The moisture barrier was not installed with the intent of serving as a chemical vapor barrier, and is not considered a competent barrier to the migration of chlorinated solvent vapor, if any. Retrofit has not been conducted on the 307 63<sup>rd</sup> Street address, which is currently occupied by coffee shop. Therefore, the original

slab and sub slab base materials including a historical portion of the original sanitary sewer lateral remain in place beneath this portion of the Property.

During the retrofit activities, the Property sewer lateral was replaced beneath 6251 and 6253 College Avenue with remaining portions planned for replacement when 307 63<sup>rd</sup> Street is retrofit beginning in approximately three months. During the sewer replacement work, the Property sewer lateral was observed to be in good condition and constructed of cast iron, at approximately five to six feet below grade and no connections to other properties or sewer piping external to the building were observed. Furthermore, no breaks or penetrations were observed. Please note that sewer connections for 6253 and 6255 College collect on the west wall and connect to the Property lateral at the southwest wall of 6253 College within the new portion of the sewer lateral.

## **2.0 PURPOSE AND SCOPE**

Concentrations of chlorinated solvents associated with the historical operation of a dry cleaning business (Red Hanger Kleener) have been identified in soil vapor in the sub-surface beneath 6235-6239 College Avenue (“College Claremont Property”) and the alleyway and parking lot lying behind the building and extending to 63<sup>rd</sup> Street. Tenants historically operated dry cleaning businesses on portions of the Property. Therefore, the purpose of this screening level subslab vapor assessment is to assess the ACDEH’s concern regarding the potential health risk due to exposure from VOCs via vapor intrusion to indoor air and provide expedited information regarding the potential of vapor intrusion from chlorinated solvents into the Property building.

For small buildings similar in size to a residential structure, such as the Property building, the DTSC recommends that at least two sub-slab probes be installed with preference to centering the probes within the building footprint and away from the foundation perimeter “due to the effects of wind on the representativeness of contaminant concentrations”<sup>1</sup>. For the Survey, four locations were selected for sub-slab probe installation and monitoring.

Prior to probe installation, property owners were consulted regarding the foundation and slab layout, location of utilities, and in-particular the sanitary sewer lateral location. We note that the sewer lateral was replaced but was not moved from its historical location. Additionally, anecdotal recollections of historical dry-cleaning equipment locations were discussed and are estimated on Figure 2. These locations were chosen to be in accessible areas, within portions of the slab segregated from each other by structural foundation grade beams, and biased towards the sewer lateral and approximate historical dry cleaning equipment locations. Samples were collected from retrofit (6251, 6253, and 6255 College) and original (307 63<sup>rd</sup> Street) locations.

## **3.0 SAMPLING SUMMARY**

Subslab vapor screening samples were collected from four locations at the Property (Figure 2) using Vapor Pin® subslab soil gas probes following the Cox Colvin standard operating procedures (“SOP”, attached).

<sup>1</sup> DTSC, *Advisory Active Soil Gas Investigations*, July 2015 (DTSC 2015)

As suggested in the SOP, Property slabs were penetrated approximately 1-inch into the underlying material to form a void and to avoid penetrating the moisture barrier beneath new sections of slab in 6251, 6253, and 6255 College which were observed to be approximately 5-inches thick. Within 307 63<sup>rd</sup> Street, the historical slab was observed to be less than 3-inches thick with an observable void beneath the slab.

After the Vapor Pins were installed, sampling personnel waited a minimum of two-hours to allow the subsurface to equilibrate per DTSC 2015. Vapor Pin locations will then directly screened using a portable photoionization detector ppbRAE 3000 from RAE Systems (“PID”, spec sheet attached) utilizing a 10.6 ev lamp and with resolution to one ppbv (parts per billion by volume). In all cases, the internal PID fan was sufficient to draw subslab soil vapor through the PID. Measurements were collected both with and without RAE Systems humidity filtering II tubes (specification sheet attached), with no observed difference between observations.

### 3.1 Vapor Screening Results

No organic vapor was detected beneath the Property. All four vapor pins were not detected for organic vapor at the ppbRAE 3000 detection limit. Screening results are providing in the following table and a field form and PID calibration sheet are attached:

Location	Installation Time	1st Observation Time	1st PID Reading (ppbv)	2nd Observation Time	2nd PID Reading (ppbv)
VP-1	7:20 PM	9:34 PM	0	9:38 PM	0
VP-2	7:35 PM	9:15 PM	0	9:34 PM	0
VP-3	6:27 PM	9:10 PM	0	9:30 PM	0
VP-4	6:40 PM	9:28 PM	0	9:45 PM	0

As discussed in the Workplan, the vapor screening guidance level identified for the Survey was 554 ppbv, as follows:

- The chemicals of concern are CVOCs. These chemicals are by definition volatile, and therefore can be identified through collection of subslab soil vapor samples.
- The Survey screening level was developed consistent with subslab soil vapor regulatory guidance levels - Environmental Screening Levels (ESLs) provided by the Regional Water Quality Control Board, Region 2 – for commercial properties according to the following rationale:
  - Conservatively assume for the purposes of this screening assessment that all subslab vapor is tetrachloroethylene or “PCE”.
  - The subslab PCE ESL for commercial properties is 2,100  $\mu\text{g}/\text{m}^3$ .
  - The ppbRAE 3000 displays parts per billion by volume which translates to an ESL of 310 ppbv.

- Using an isobutylene calibration gas and 10.6 ev lamp and assuming that all measured vapor is PCE, the PID conversion factor is 0.57.
- Using the PID conversion factor of 0.57, the ppbRAE will report the PCE subsurface ESL at 544 ppbv.

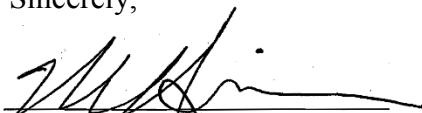
#### 4.0 CONCLUSIONS

No subsurface vapor was detected during the Survey. As discussed in the *Subslab Vapor Screening Workplan* (“Workplan”, EnviroAssets, May 26, 2017) and in this summary, PID screening results below 544 ppbv are conclusive that potential impacts from volatile organic compounds, specifically chlorinated solvents from historical dry cleaning operations both on and in the vicinity of the Property do not present a health risk due to exposure from VOCs via vapor intrusion to indoor air. As subsurface screening results were negative proximate to the estimated location of the historical dry cleaning equipment and garbage can storage area, near the historical and current sewer lateral, and beneath both new and original foundation slabs, the data suggests that the Property is neither a source of a release of CVOCs to the environment nor has it been significantly impacted by contamination identified proximate to the Property and migrating from the College Claremont Property.

#### Limitations

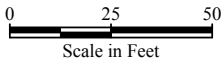
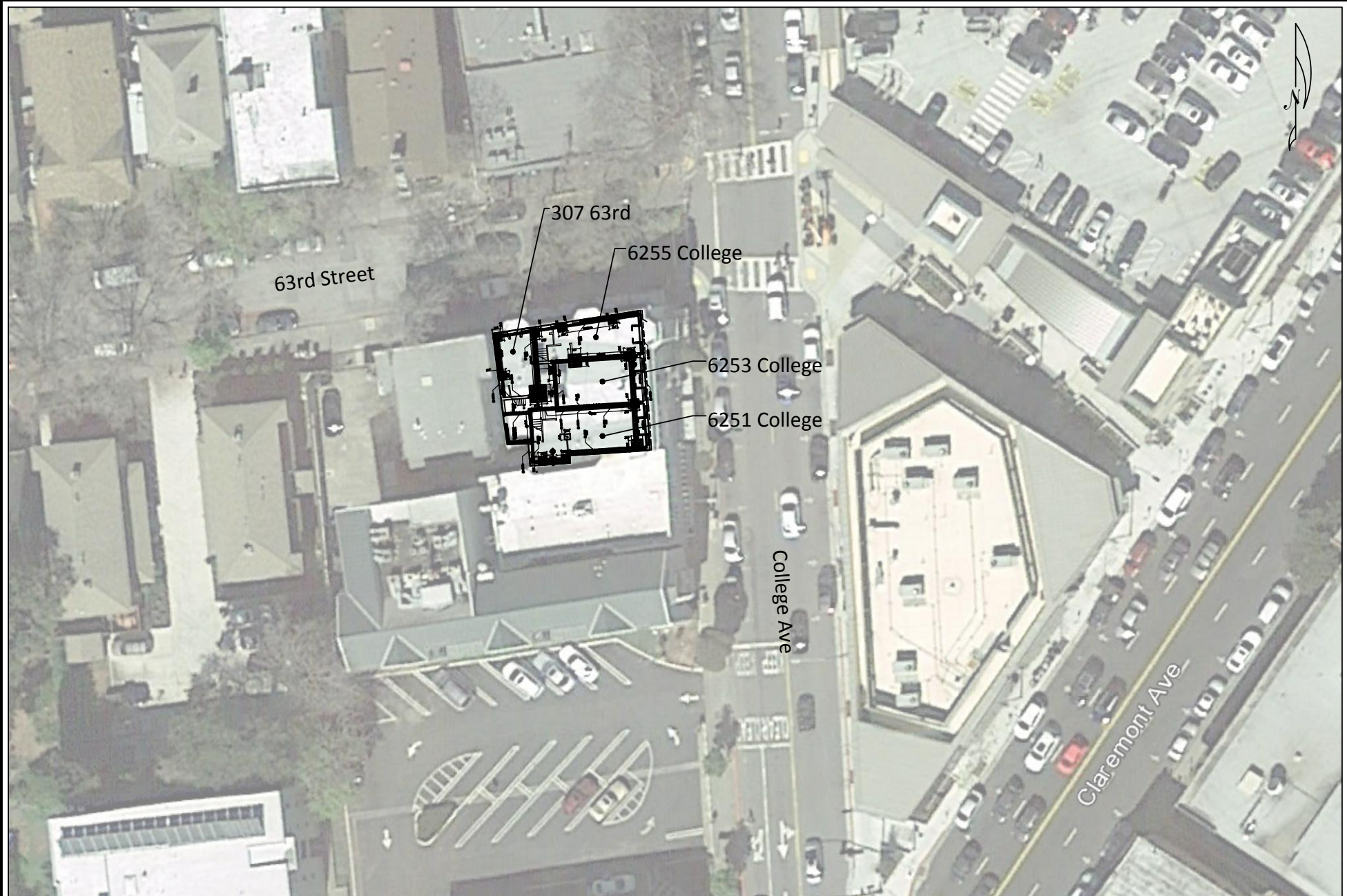
The findings, recommendations, and/or professional opinions presented in this proposal have been prepared in accordance with generally accepted professional environmental practices, and within the scope of the project. There is no other warranty, either express or implied.

Sincerely,

  
Michael Harrison, P.E.  
Principal Engineer

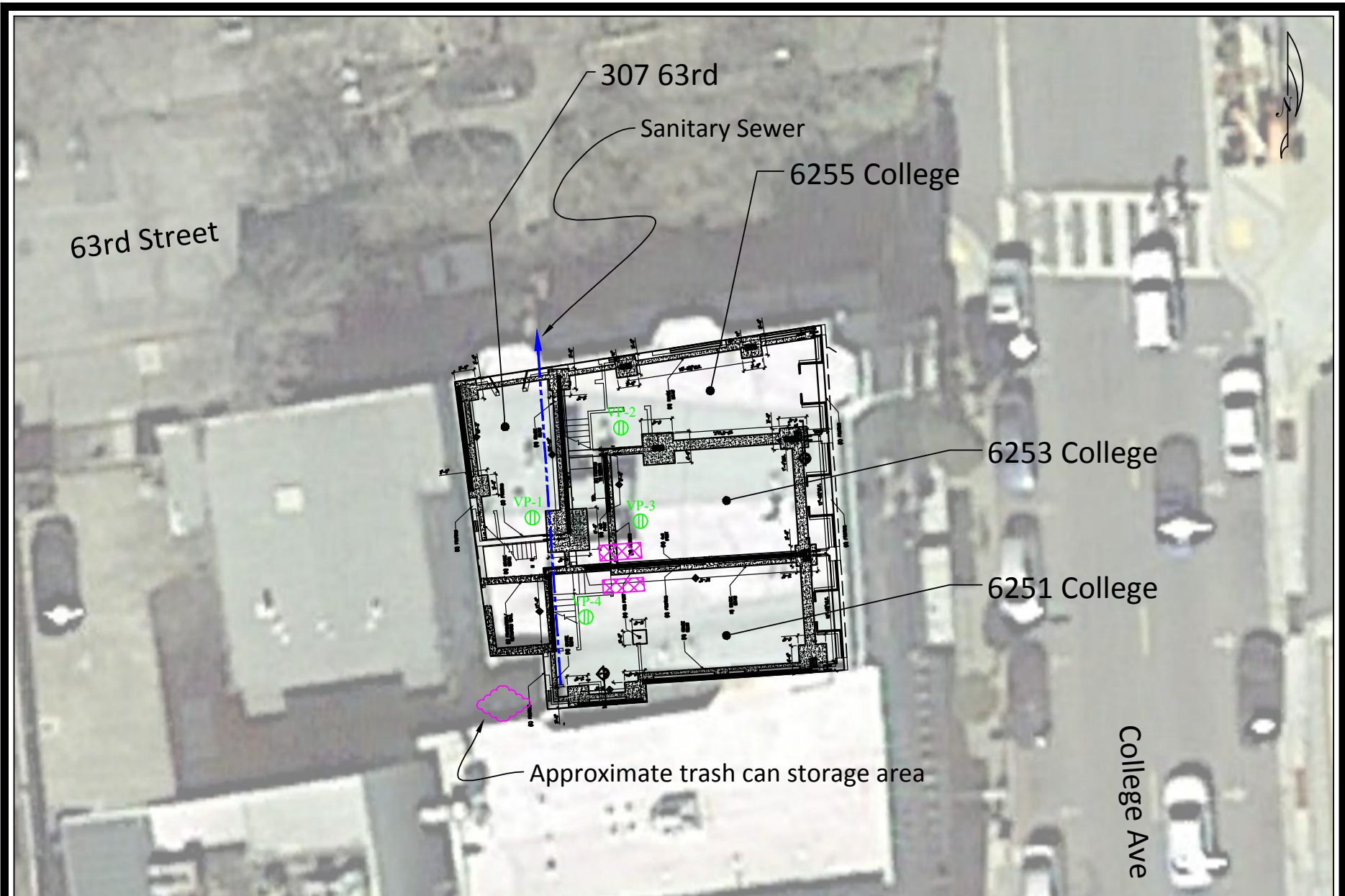
Attach.

CC: John Till, Esq.



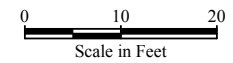
Aerial photograph sourced from Google Earth

No.	Date	Revision	Approved	Date:	5/26/2017
				Drawn:	MH
				File Name:	EA22404-17



**Legend**

- ⊕ VP Approximate vapor pin location
- X X Approximate location of historical dry cleaning equipment



Aerial photograph sourced from Google Earth



**EnviroAssets, Inc.**  
 www.EnviroAssets.com  
 V: (888) 748-8820  
 F: (510) 346-9500

No.	Date	Revision	Approved

Date: 5/26/2017  
 Drawn: MH  
 File Name: EA22404-17

**SAMPLE LOCATIONS**  
 6251-6255 College Avenue, 305 & 307 63rd Street  
 Oakland, California

Figure	2
Project	EA270



## Standard Operating Procedure Installation and Extraction of the Vapor Pin™

Updated April 3, 2015

### Scope:

This standard operating procedure describes the installation and extraction of the Vapor Pin™ for use in sub-slab soil-gas sampling.

### Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin™ for the collection of sub-slab soil-gas samples or pressure readings.

### Equipment Needed:

- Assembled Vapor Pin™ [Vapor Pin™ and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- Vapor Pin™ installation/extraction tool;
- Dead blow hammer;
- Vapor Pin™ flush mount cover, if desired;
- Vapor Pin™ drilling guide, if desired;
- Vapor Pin™ protective cap; and

- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the Vapor Pin™.



Figure 1. Assembled Vapor Pin™

### Installation Procedure:

- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Set up wet/dry vacuum to collect drill cuttings.
- 3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a Vapor Pin™ drilling guide is recommended.
- 4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

Vapor Pin™ protected under US Patent # 8,220,347 B2

- 5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.
- 6) Place the lower end of Vapor Pin™ assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the Vapor Pin™ to protect the barb fitting, and tap the Vapor Pin™ into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the Vapor Pin™ to avoid damaging the barb fitting.



Figure 2. Installing the Vapor Pin™.

During installation, the silicone sleeve will form a slight bulge between the slab and the Vapor Pin™ shoulder. Place the protective cap on Vapor Pin™ to prevent vapor loss prior to sampling (Figure 3).



Figure 3. Installed Vapor Pin™

- 7) For flush mount installations, cover the Vapor Pin™ with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).



Figure 4. Secure Cover Installed

- 8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.
- 9) Remove protective cap and connect sample tubing to the barb fitting of the Vapor Pin™. This connection can be made using a short piece of Tygon™ tubing to join the Vapor Pin™ with the Nylaflow



tubing (Figure 5). Put the Nylaflow tubing as close to the Vapor Pin as possible to minimize contact between soil gas and Tygon™ tubing.



Figure 5. Vapor Pin™ sample connection.

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the Vapor Pin™ via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.



Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the Vapor Pin™.

#### Extraction Procedure:

- 1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the Vapor Pin™ (Figure 7). Continue turning the tool clockwise to pull the Vapor Pin™ from the hole into the installation/extraction tool.
- 2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.



Figure 7. Removing the Vapor Pin™.

- 3) Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the Vapor Pin™ in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes.

The Vapor Pin™ is designed to be used repeatedly, however, replacement parts and supplies will be required periodically. These parts are available on-line at [VaporPin.CoxColvin.com](http://VaporPin.CoxColvin.com).



# ppbRAE 3000

Portable Handheld VOC Monitor



The compact ppbRAE 3000 is a comprehensive VOC gas monitor and datalogger for hazardous environments. The ppbRAE 3000 is the most advanced handheld VOC monitor available for parts-per-billion detection. This third-generation patented PID device monitors VOCs using a photoionization detector with a 9.8 eV, 10.6 eV UV-discharge lamp.

The built-in wireless modem allows real-time data connectivity with the ProRAE Guardian command center located up to two miles/3 km away (with optional RAElink3 portable modem) from the ppbRAE 3000 detector.

- Accurate VOC measurement in all operating conditions
- Easy access to lamp and sensor in seconds without tools
- Patented sensor and lamp auto-cleaning reduces maintenance
- Monitors real-time readings and location of people
- Low Cost of Ownership: 3-year 10.6 eV lamp Warranty

## KEY FEATURES

### Proven PID Technology

- 3-second response time
- Extended range from 1 ppb to 10,000 ppm with best in class linearity
- Humidity compensation with integral humidity and temperature sensors

### Integrated

- Real-time wireless data transmission through built-in Bluetooth & RAElink3 link
- Integrated Correction Factors list of 220 compounds—more than any other PID
- Includes flashlight for dark conditions
- Large graphic display presents gas type, Correction Factor and concentration

### Durable

- Easy access to battery, lamp and sensor in seconds without tools
- Rugged housing withstands use in harsh environments
- IP-67 waterproof design for easy cleaning and decontamination

## APPLICATIONS

- Oil & Gas
- HazMat
- Industrial Safety
- Civil Defense
- Environmental & Indoor Air Quality



Workers can easily measure VOCs and wirelessly transmit readings up to two miles/3 km away.



# ppbRAE 3000

Portable Handheld VOC Monitor



## Specifications

### Detector Specifications

Size	10" L x 3.0" W x 2.5" H (25.5 cm x 7.6 cm x 6.4 cm)
Weight	26 oz (738 g)
Sensors	Photoionization sensor with standard 10.6 eV or optional 9.8 eV lamp
Battery	<ul style="list-style-type: none"><li>• Rechargeable, external field-replaceable Lithium-Ion battery pack</li><li>• Alkaline battery adapter</li></ul>
Operating Hours	16 hours of operation (12 hours with alkaline battery)
Display Graphic	4 lines, 28 x 43 mm, with LED backlight for enhanced display readability
Keypad	1 operation and 2 programming keys, 1 flashlight on/off
Direct Readout	Instantaneous reading <ul style="list-style-type: none"><li>• VOCs as ppm by volume or mg/m<sup>3</sup> (3 in upper case for cubic)</li><li>• STEL, TWA and PEAK</li><li>• Battery and shutdown voltage</li><li>• Date, time, temperature</li></ul>
Alarms	95 dB (at 12"/30 cm) buzzer and flashing red LED to indicate exceeded preset limits <ul style="list-style-type: none"><li>• High: 3 beeps and flashes per second</li><li>• Low: 2 beeps and flashes per second</li><li>• STEL and TWA: 1 beep and flash per second</li><li>• Alarms latching with manual override or automatic reset</li><li>• Additional alarm for low battery and pump stall</li></ul>
EMI/RFI	Highly resistant to EMI/RFI Compliant with EMC Directive 89/336/EEC
IP Rating	<ul style="list-style-type: none"><li>• IP-67 unit off and without flexible probe</li><li>• IP-65 unit running</li></ul>
Datalogging	Standard 6 months at one-minute intervals
Calibration	Two-point or three-point calibration for zero and span Calibration memory for 8 calibration gases
Sampling Pump	<ul style="list-style-type: none"><li>• Internal, integrated flow rate at 500 cc/mn</li><li>• Sample from 100' (30m) horizontally and vertically</li></ul>
Low Flow Alarm	<ul style="list-style-type: none"><li>• Auto pump shutoff at low-flow condition</li></ul>
Communication	<ul style="list-style-type: none"><li>• Download data and upload instrument set-up from PC through charging cradle or optional Bluetooth™</li><li>• Wireless data transmission through built-in RF modem</li></ul>
Wireless Network	ProRAE Guardian Real-Time Wireless Safety System
Wireless Frequency	ISM license-free bands
Wireless Range (Typical)	ppbRAE 3000 to RAELink3 or RAELink3 Z1 modems ~ 33 feet (10 meters)
Hazard Area Approval	<ul style="list-style-type: none"><li>• US and Canada: UL, cUL, Classified as Intrinsically Safe for use in Class I, Division 1 Groups A, B, C, D</li><li>• Europe: ATEX Ex II 2GEx ia IIC/IIB T4</li><li>• IECEx: Ex ia IIC/IIB T4</li></ul>
Temperature	-4° to 113° F (-20° to 50° C)
Humidity	0% to 95% relative humidity (non-condensing)
Attachments	Durable black rubber boot with straps
Warranty	3-year warranty for 10.6 eV lamp, 1 year for pump, battery, and instrument

Specifications are subject to change

### Sensor Specifications

Gas Monitor	Range	Resolution	Response Time T90
VOCs	0 to 9999 ppb	1 ppb	< 3 s
	10 to 99 ppm	0.01 ppm	< 3 s
	100 to 99 ppm	0.1 ppm	< 3 s
	1000 to 9999 ppm	1 ppm	< 3 s

### Monitor only includes:

- ppbRAE 3000 Monitor, with RAE Systems UV lamp, as specified
- Datalogging with ProRAE Studio II
- Charging/download adapter
- VOC Zeroing Tubes (1 box)
- Tube adapter
- Tedlar® bag for calibration
- Flex-I-Probe™
- External filter
- Rubber boot with straps
- Alkaline battery adapter
- Lamp-cleaning and tool kit
- Operation CDROM
- Operation & Maintenance manual
- Soft leather case

### Monitor with accessories kit adds:

- Hard transport case with pre-cut foam padding
- Charging/download cradle
- 5 Porous metal filters and O-rings
- Organic vapor zeroing kit
- Gas outlet port adapter and tubing

### Optional calibration kit adds:

- 10 ppm isobutylene calibration gas, 34L
- Calibration regulator and flow controller

### Optional Guaranteed Cost of Ownership Program:

- 4-year repair and replacement guarantee
- Annual maintenance service

### CORPORATE HEADQUARTERS

#### RAE Systems by Honeywell

3775 North First Street  
San Jose, CA 95134 USA  
raesales@raesystems.com

### WORLDWIDE SALES OFFICES

**USA/Canada** 1.877.723.2878  
**Europe** +45.86.52.51.55  
**Middle East** +00971.4.440.5949  
**China** +86.10.5885.8788-3000  
**Asia Pacific** +852.2669.0828

DS-1024-03

www.raesystems.com



# Humidity Filtering II Tube

For MiniRAE 3000 and Other Photoionization Detectors



The Humidity Filtering II Tube dries the sample gas entering pumped instruments. It is particularly suited for removing humidity effects on photoionization detectors (PIDs) while making VOC measurements, and typically lasts for about a half hour of continuous readings. The Humidity Filtering II Tube utilizes a solid adsorbent to remove moisture without impacting the detection and measurement of most VOCs.

- Facilitates quick, on-the-spot measurements of many gases and vapors
- Extends the time needed between sensor cleanings

## KEY FEATURES

### Accurate

- Enables continuous reading of VOCs under extremely humid conditions for about one half hour (per tube) at room temperature
- Prevents drifting readings at high humidity when the sensor is dirty.
- Caution: Absorbs some compounds such as ammonia and slows the response of heavy compounds, especially at low concentrations or low temperatures. (Check RAE Systems' Technical Note TN-178 for adapter connections or for further details.)

### Versatile

- Attaches to the Flex-I-Probe™ inlet with the same adapter used for ppbRAE 3000 VOC zeroing tubes.
- Especially useful for measuring chlorinated solvents and fuels under high humidity conditions as are often encountered during soil and water remediation.
- Can be used with other instruments having a built-in pump such as MiniRAE Lite, ppbRAE 3000, UltraRAE 3000, MultiRAE Lite, MultiRAE and MultiRAE Pro when humidity is an issue, when using a PID or making low-level LEL sensor measurements.

## APPLICATIONS

Use with photoionization detectors where humidity effects need to be removed during applications such as:

- Soil and water remediation
- VOCs in landfill sites



# Humidity Filtering II Tube

For MiniRAE 3000 and Other Photoionization Detectors



## SPECIFICATIONS

**Table 1. Humidity Filtering Capacity**

Temp °C	Temp °F	Relative Humidity (%)	Run time to t <sub>10</sub> (min @ 500 cc/min)	Run time to t <sub>20</sub> (min @ 500 cc/min)
45	113	99	12	14
		75	17	18
		50	35	>40
		25	>40	>40
40	104	100	18	20
		75	25	30
		50	40	>40
30	86	100	22	26
		75	28	32
		50	40	>40
20	68	100	23	
		75	34	>40
		50	40	

Note: The contents of the tubes are non-hazardous, but may absorb hazardous components from the sample gas.

**Table 1. Effect on VOC Response**

Compound	Conc. (ppm)	Temp (°C)	t <sub>90</sub> (sec)	CF*
Isobutylene	100	22	3	1.0
Isobutylene	10	0	5	1.17
Cyclohexane	10	22	3	1.0
Octane	100	22	3	1.0
Undecane	100	22	60	1.1
Benzene	5	22	3	1.0
Toluene	10	22	3	1.0
Xylene	100	22	10	1.05
Styrene	50	22	10	1.0
Gasoline	100	22	15	1.05
Gasoline	10	22	15	1.0
Gasoline	10	0	28	1.6
Jet Fuel JP-5	10	22	65	1.0
Diesel Fuel	100	22	110	1.3
Vinyl Chloride	10	22	3	1.0
Trichloroethylene	10	22	3	1.0
Trichloroethylene	10	0	5	1.2
Perchloroethylene	10	22	4	1.0
Glutaraldehyde	10	22	NR** (480)	NR** (1.05)
Ethanol	1000	22	3	1.0
Ethanol	100	22	40	1.0
Isopropanol	10	22	90	1.15
Acetone	1000	22	3	1.0
Acetone	100	22	20	1.0
Acetone	10	22	80	1.0
Acetone	10	0	115	1.17
Phenol	20	22	150	1.0
Methyl methacrylate	10	22	150	1.05
Dimethyl sulfide	10	22	3	1.0
Ethyl mercaptan	10	22	4	1.05
Butyl mercaptan	10	22	5	1.05
Hydrogen sulfide	7	22	3	1.0
Ethylamine	high	22	NR**	NR**
Ammonia	50	22	NR**	NR**

\* CF = Correction Factor. Multiply by reading to get true concentration to correct from some loss.

\*\* Not recommended because of severe losses.

### CORPORATE HEADQUARTERS

#### RAE Systems by Honeywell

3775 North First Street  
San Jose, CA 95134 USA  
raesales@raesystems.com

DS-1014-04

### WORLDWIDE SALES OFFICES

**USA/Canada** 1.877.723.2878  
**Europe** +45.86.52.51.55  
**Middle East** +00971.4.440.5949  
**China** +86.10.5885.8788-3000  
**Asia Pacific** +852.2669.0828

[www.raesystems.com](http://www.raesystems.com)



### Calibration and Components Checklist Photoionization Detector

580B	Instrument ID # _____	Thermo Environmental PID
RAE	Instrument ID # _____	RAE 2000
RAE	Instrument ID # _____	RAE 3000
RAE	Instrument ID # <u>326</u>	RAE 3000 PPE
RAE	Instrument ID # _____	Ultra RAE

### Components

Lamp 10.6 <input checked="" type="checkbox"/>	Lamp 11.7 _____	Lamp 11.8 _____
Date Out: <u>05/31/17</u>	Date In: _____	
Meter: <input checked="" type="checkbox"/>	_____	Meter
Probe: <input checked="" type="checkbox"/>	_____	Probe
Filter: <input checked="" type="checkbox"/>	_____	Filter
Charger: <input checked="" type="checkbox"/>	_____	Charger
Manual: <input checked="" type="checkbox"/>	_____	Manual
Case: <input checked="" type="checkbox"/>	_____	Case
Calibration Sheet: <input checked="" type="checkbox"/>	_____	Calibration Sheet
Terms & Conditions: <input checked="" type="checkbox"/>	_____	Terms & Conditions

### Parameters

Response Factor 1.00

### Calibration Gases Used

100 ppm Isobutylene <input checked="" type="checkbox"/>	_____	Meter Response
10 ppm Isobutylene <input checked="" type="checkbox"/>	<u>10.00</u>	Meter Response
100 ppm Hexane _____	_____	Meter Response
10 ppm Benzene _____	_____	Meter Response
Other Gas Used _____	_____	Meter Response

Inspected & Calibrated By: [Signature] Date: 05/31/17

**Note:** This unit has been tested and is in proper working condition. This unit has been cleaned and should be returned in the same condition. Any components missing upon return of this instrument shall be billed at the current price. If the unit is returned overly dirty or damaged a service order will be issued and your account will be billed. Should the unit malfunction you must notify EILCO within 24 hours or you will be billed for the time the unit was in your possession.