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By Alameda County Environmental Health 8:54 am, Aug 30, 2017

July 26, 2017

Mr. Mark Detterman
Hazardous Materials Specialist
Alameda County Department of Environmental Health
Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Indoor Air Survey Letter of Findings--EmeryBay Phase I Condo Parking Garage Real Estate
Offices--6400 Christie Avenue, Emeryville, California.

Dear Mr. Detterman:

Enclosed is the Stellar Environmental Solutions, Inc. report summarizing the site activities conducted in June 2017 at the referenced site. This report is being submitted on behalf of the owner and Responsible Party, Emerybay Commercial Association. Subject site activities included conducting the annual indoor air monitoring event.

In accordance with regulatory requirements, an electronic copy of this report has been uploaded to ACEH and to the State Water Resources Control Board's GeoTracker system.

We declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report are true and correct to the best of our knowledge. If you have any questions regarding this report, please contact us at (510) 644-3123.

Sincerely,



Richard S. Makdisi, P.G.
Principal Geochemist & President



Ms. Katherine Collins
Emerybay Commercial Assoc.



July 26, 2017

Kristy Michelmore, RPA | Property Manager
Harvest Properties, Inc
555 12th Street, Suite 250
Oakland, CA 94607

Subject: Indoor Air Survey Letter of Findings--EmeryBay Phase I Condo Parking Garage
Real Estate Offices--6400 Christie Avenue, Emeryville, California

Dear Ms. Michelmore:

INTRODUCTION AND BACKGROUND

In February 2009, on behalf of the property owner and “Responsible Party” (Emery Bay Commercial Association), Stellar Environmental Solutions, Inc. (Stellar Environmental) completed a comprehensive Indoor Air Survey for the Emery Bay Phase I Condos located at 6400 Christie Avenue in Emeryville, California. The initial indoor air sampling event was completed to evaluate the potential for vapor intrusion from subsurface hydrocarbon contamination, at the request of the lead regulator, Ms. Barbara Jakub of the Alameda County Department of Environmental Health (ACEH).

The baseline 2009 vapor intrusion evaluation included indoor air sampling within the open podium parking garage, the one enclosed space within the ground floor parking area—the real estate offices for the condominium—and indoor air within the hallways of the first floor. Only the indoor air within the sales office showed any detection above advisory limits (benzene) when compared to the risk level standard in at the time in 2009 which were the California Department of Toxic Substance Control (DTSC) California Human Health Screening Levels (CHHSLs). The indoor air concentrations in 2009 were not considered to be at a level that required corrective action when compared to the CHHSLs. Since 2013, the California Water Quality Control Board

Environmental Screening Levels (ESLs) are used instead of the CHHSLs to evaluate indoor air quality risk (see Regulatory Considerations below).

In general, once indoor air standards are exceeded, the need for and type of additional investigative and corrective actions are generally driven by the potential risk associated with the contamination, with input by the regulatory agency providing oversight, which in this case is the Alameda County Environmental Health Department (ACEH). The ACEH case worker did not request any further work and Stellar Environmental recommended a follow on year of monitoring within the real estate office and to look at mitigating the indoor air risk by the increasing air flow rates so that the air inside the building is exchanged more frequently.

Monitoring the indoor air within the offices was stopped until the 2013 groundwater monitoring data showed that the groundwater dewatering to support the construction at the building immediately south of the Emery Bay Phase I Condos was being pulled southward beneath the real estate offices, which is contrary to the normal westward flow direction. The increase in concentrations of benzene and other petroleum hydrocarbons, as reported by Stellar Environmental, prompted Emery Bay Commercial Association to request new indoor air tests be performed to evaluate if any substantial change in indoor air resulted from the adjacent dewatering drawing the hydrocarbon plume southward.

Indoor air testing in December 2013 and July 2014 were conducted with samples collected in the mail room with an additional control sample placed outdoors in front of the building entrance. Results from those air surveys showed an increase in the concentrations of benzene, toluene, ethylbenzene, total xylenes and TPH-gasoline in the July 2014 sample compared to the December 2013 sample. The July 2014 indoor air sample collected in the mail room showed TPG-gasoline detected at 1,000 $\mu\text{g}/\text{m}^3$ which was above the Water Board ESL guidance value of 100 $\mu\text{g}/\text{m}^3$. Benzene was detected at 15 $\mu\text{g}/\text{m}^3$, above the “commercial property” ESL of 0.141 $\mu\text{g}/\text{m}^3$. Of these indoor air contaminants detected, benzene (15 $\mu\text{g}/\text{m}^3$), ethyl benzene (8.8 $\mu\text{g}/\text{m}^3$) and total xylenes (31.7 $\mu\text{g}/\text{m}^3$) were detected above their respective guidance values.

Additional sampling was conducted in June 2016. The results showed the least impact to the indoor air since the initial 2010 indoor air monitoring at the ground floor sales office. The sample collected from the mail room showed an approximately 97% decrease in the benzene concentration and a slight increase in the naphthalene concentration compared to the previous July 2014 sampling event. However, because concentrations still exceed commercial ESLs, there is some risk of exposure from benzene and naphthalene vapor intrusion to commercial occupants of the ground floor mail room and the lobby/security desk area.

Even with the marked decrease in benzene concentrations, the 2016 indoor air survey found levels of benzene and naphthalene to be above the Water Board ESLs in the mail room and benzene levels above the ESL in the lobby. The purpose of the June 2017 survey is to continue to track indoor air concentrations of contaminants of concern.

The specific goals of this Stellar Environmental study were to:

- Follow the California Department of Toxic Substance Control (DTSC) guidance for conducting indoor air sampling;
- Collect one indoor air sample and one outdoor ambient air sample during normal office working hours (8:30 am to 4:30 pm);
- Analyze the indoor air quality samples for the chemical constituents previously detected using EPA Method TO-15 (benzene, toluene, ethyl benzene, and total xylenes).
- Compare the 2017 sampling results to the previous 2016 results to evaluate if the pulling of the hydrocarbon plume southward has had any appreciable impact on indoor air quality within the real estate sale office.

Figure 1 presents the general site location. Figure 2 is a site map of the property. Figure 3 shows the downstairs site plans, respectively, as well as sample locations and analytical results.

The Alameda County Department of Environmental Health (ACEH) has not issued a directive requesting this indoor air survey; however, these studies have been conducted under ACEH oversight (Case number RO #2799) and in conformance with the DTSC guidance on vapor intrusion. This report has been uploaded to the ACEH ftp site and to the State Water Resources Control Board online GeoTracker system (Global ID SLT2005561).

INDOOR AIR SAMPLING

Air Sampling Location Rationale

Based on the results of the most recent 2016 indoor air monitoring event results, the 2017 indoor air survey was conducted with placement of the indoor air samplers in the mail room area of the ground floor office (located in the southwestern corner of the building) and one in the lobby area. One “control” or ambient air sample was also placed outdoors in front of the sales office as in previous surveys. The previous 2009 vapor intrusion evaluation established that there was no

Stellar Environmental Solutions, Inc.

risk within the areas of the open-air podium garage or first floor residential apartments; samples previously collected in the garage and in the first floor living space did not contain contaminant concentrations above the CHHSL's or ESLs. Sampling results from the July 2016 air monitoring event indicated TPH-gasoline in the mail room sample at $820 \mu\text{g}/\text{m}^3$ which is below the Water Board ESL guidance value of $2,500 \mu\text{g}/\text{m}^3$. Benzene was detected at $0.71 \mu\text{g}/\text{m}^3$ above the Water Board ESL guidance value of $0.42 \mu\text{g}/\text{m}^3$. Given the June 2016 indoor air monitoring results, confirmation sampling was collected from the same locations as were taken in that 2016 air monitoring event.

Indoor Air Sampling Protocol

Mr. Steve Bittman of Stellar Environmental completed the sampling setup at 8:30 am on June 20, 2017 and retrieved the sampling apparatus at 4:30 pm the same day. Photodocumentation of the sampling event is attached.

The indoor air sampling program generally followed the DTSC guidance entitled: the *Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, February 2005). The protocol used, which were essentially the same as used for the 2009, 2010, 2013, 2014 and 2016 sampling events, included:

- Samples were collected for analysis by EPA method TO-15 [used for integrated (greater than a few minutes) sampling events], which detects the contaminants of concern: Petroleum Hydrocarbons as gasoline (TPHg, benzene, toluene, ethylbenzene, total xylenes and naphthalene).
- One air sample was collected from inside the ground-floor office/security desk area, one from the mail room and one outdoor, ambient sample was collected outside the entrance to the lobby.
- The indoor and outdoor air samples were collected over an 8-hour period using 6-liter Summa® canister with a calibrated flow controller set at 11.5 milliliters per minute with the sample intake positioned approximately 3-5 feet above the building floor; and
- The samples were collected during the average period when the building would typically be occupied from 8:30 am until 4:30 pm.

The three air samples were maintained at ambient temperature, out of direct sunlight and transported by courier to McCampbell Analytical of Pittsburg, California, a laboratory certified by the State of California Environmental Laboratory Accreditation Program (ELAP) for the analytical method utilized in this investigation.

REGULATORY CONSIDERATIONS

In December 2004, the Office of Environmental Health Hazard Assessment (OEHHA) on behalf of the California Environmental Protection Agency (CAL EPA) established their own risk equivalent to the Water Boards Environmental Screening Levels (ESLs), which were called California Human Health Screening Levels (CHHSLs). The Water Board also established their own Environmental Screening Levels (ESL's) which have superseded CHHSLs in that the DTSC stopped updating them in 2013.

The Water Board ESLs were most recently updated in February 2016 and now include values for indoor air for gasoline range petroleum hydrocarbons (TPG-gasoline) and their benzene, toluene, ethylbenzene and xylenes (BTEX) components and naphthalene. The concentrations from this survey are compared to the Water Board 2016 Environmental Screening Levels (ESL) guidance as that has superseded the CHHSLs, which are no longer being updated. The CHHSL and ESLs historically had very similar values. In addition, the California Occupational Safety and Health Administration (CAL OSHA) has also established Permissible Exposure Limits (PELs) that reflect the maximum permitted 8-hour average concentration limit of an airborne contaminant associated with a given industry. The PELs are to be applied to occupational exposure (such as exposure to dry cleaner chemicals for workers at dry cleaners or petroleum exposure for workers at a petroleum service station) and are not applicable in this case. The CAL OSHA standards, while more conservative, are similar to the federal OSHA standards. Both the Cal OSHA standards and federal standards are law versus guidance and are significantly less conservative than the Water Board ESL's against which the indoor air samples in this report are compared to.

It is important to note that neither CHHSLs nor ESLs, were conceived as a cleanup criteria nor do they stipulate regulatory agency action. Rather, the ESLs are Tier 1 conservative screening criteria used to evaluate sites for potential human health or environmental exposure concerns where releases of hazardous materials to soils or groundwater have occurred. And they serve as indicators source of contamination concerns that can carry environmental liability.

INDOOR AIR SAMPLING ANALYTICAL RESULTS AND DISCUSSION

Decreases in all constituents were observed. The indoor air sample collected in the ground-floor mail room (IA-1) showed a nominal increase in the concentration of ethylbenzene in the June 2017 sample compared to the June 2016 sample, from 1.3 $\mu\text{g}/\text{m}^3$ to 2.1 $\mu\text{g}/\text{m}^3$ which is still below the indoor air ESL for ethylbenzene of 4.9 $\mu\text{g}/\text{m}^3$. Benzene was detected at 0.66 $\mu\text{g}/\text{m}^3$ in sample IA-1 compared to the “commercial property” ESL of 0.42 $\mu\text{g}/\text{m}^3$. Naphthalene also exceeding the commercial ESL with a concentration of 0.59 $\mu\text{g}/\text{m}^3$ versus the commercial ESL value for naphthalene of 0.36 $\mu\text{g}/\text{m}^3$.

The indoor air sample collected in the ground floor lobby/security desk area (IA-2) contained benzene at a concentration of 0.53 $\mu\text{g}/\text{m}^3$ exceeding the commercial ESL of 0.42 $\mu\text{g}/\text{m}^3$. Decreases in benzene, toluene and total xylene were observed with concentrations of toluene, ethylbenzene, xylenes, naphthalene and TPH-gasoline all detected below ESLs in sample IA-2.

The “control” outdoor (ambient) air sample OA-1 was collected in front of the sales office entrance to provide background concentration data. Ethylbenzene and total xylenes showed a decrease in concentrations for the June 2017 sample at 1.5 $\mu\text{g}/\text{m}^3$ and 0.89 $\mu\text{g}/\text{m}^3$ respectively compared to the June 2016 sample which contained 1.5 $\mu\text{g}/\text{m}^3$ ethylbenzene and 0.89 $\mu\text{g}/\text{m}^3$ xylenes. Benzene was detected at 0.43 $\mu\text{g}/\text{m}^3$ in OA-1 which only slightly exceeded the ESL of 0.42 $\mu\text{g}/\text{m}^3$ for benzene. Concentrations of toluene, ethylbenzene, xylenes, naphthalene and TPH as gasoline were detected at concentrations below ESLs. Table 1 shows the historic and current June 20, 2017 concentrations of indoor air contaminants detected during the 8-hour sampling events compared to the appropriate commercial ESLs.

CONCLUSIONS AND RECOMMENDATIONS

The June 2017 results show the least impact to the indoor air since the initial 2010 indoor air monitoring at the ground floor sales office. The June 2017 sample IA-1 collected from the mail room showed a decrease for all constituents with benzene detected at 0.66 $\mu\text{g}/\text{m}^3$ exceeding the “commercial property” ESL of 0.42 $\mu\text{g}/\text{m}^3$, with naphthalene also exceeding the commercial ESL of 0.36 $\mu\text{g}/\text{m}^3$.with a concentration of 0.59 $\mu\text{g}/\text{m}^3$. Benzene was the only constituent detected in the lobby/security desk area that exceeded the commercial ESL.

Because these concentrations still exceed commercial ESLs, there is some risk of exposure from benzene and naphthalene vapor intrusion to commercial occupants of the ground floor mail room and the lobby/security desk area.

In general, once ESLs are exceeded, the need for a type of additional investigative and corrective actions are generally driven by the potential risk associated with the contamination, with input by the regulatory agency providing oversight, which in this case is the ACEH.

Indoor air risk can be mitigated by the increasing air exchange rates so that the air inside the sales offices area of building is flushed more frequently. The extent to which this is effective can be gauged by air monitoring under the new air exchange conditions. It is recommended that air exchange in the management/security offices be additionally increased so that an exposure risk is potentially mitigated and that another indoor air sampling event occur within one year to compare the June 2017 results.

Longer term risk can be reduced by mitigating the hydrocarbon groundwater plume that is the source of the benzene vapor intrusion.

Based on the findings of this and the previous investigations, Stellar Environmental recommends conducting another indoor air sampling event, as recommended by DTSC guidance, within 1 year, by June 2017.

Stellar Environmental will upload this report to both the ACEH ftp site as well as the Water Board Geotracker site.

We trust this review assists you in evaluating the salient environmental issues associated with the subject site. Please call the undersigned directly at (510) 644-3123 if you have any questions regarding this report of findings.

Sincerely,



Steve Bittman
Senior Geologist/Project Manager



Richard S. Makdisi, P.G.
Principal Geochemist & President



Table 1
Cumulative Indoor Air Sample Analytical Results – 2010-2017
Eight Hour Test
6400 Christie Street, Emeryville, California

Analyte	2010 Sales Office	2013 Mail Room	2013 Outdoor Air	2014 Mail Room	2014 Outdoor Air	2016 Mail Room	2016 Lobby	2016 Outdoor Air	2017 Mail Room	2017 Lobby	2017 Outdoor Air	Water Board Feb 2016 Commercial ESL
	IA-2-1	IA-1	OA-1	IA-1	OA-1	IA-1	IA-2	OA-1	IA-1	IA-2	OA-1	
Benzene	3.45	5.3	1.7	15.0	0.34	0.71	0.47	< 0.58	0.66	0.53	0.43	0.42
Toluene	4.41	22	9.7	63	0.77	240	18	<0.68	13	1.6	0.97	1,300.00
Ethyl Benzene	4.99	4.0	0.77	8.8	0.16	1.3	< 0.77	1.5	2.1	0.37	0.23	4.90
Total Xylenes	2.47	17.3	3.52	31.7	0.75	5.8	1.3	0.97	4.9	1.1	0.89	440.00
Total TPHg	NA	940	< 43	1,000	390	820	< 360	< 370	210	100	< 36	2,500.00
Naphthalene	NA	NA	NA	1.8	0.12	2.1	< 4.7	< 4.7	0.59	0.27	0.20	0.36

Notes: All values in µg/m³ **Bold** type designated exceeding guidance value. Cal/OSHA PEL = California Occupational Safety and Health Administration Permissible Exposure Limit ESL = Water Board Environmental Screening Level for commercial properties (February 2016). NA= Constituent not analyzed for. Samples denoted with < are below the laboratory detection limit. All limits are the lowest possible detection limit possible by the laboratory. Samples were collected in the breathing zone between 3.5 and 5.feet above the top of the floor.

FIGURES

PHOTODOCUMENTATION

**LABORATORY ANALYTICAL RESULTS, CHAIN
OF CUSTODY**
