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ADDITIONAL SOIL VAPOR SAMPLING REPORT AND REQUEST FOR UNDERGROUND STORAGE TANK CLOSURE

**Former Charles Lowe Facility
1400 Park Avenue, Emeryville, California
Fuel Leak Case No. RO0000398
GeoTracker Global ID T0600102202**

Prepared for:

Emeryville Properties

1400 Park Avenue
EMERYVILLE, CALIFORNIA 94608-0445

Prepared by:

DUDEK

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Encinitas, California 92024



Gwen Tellegen, P.E.
Principal Engineer



DECEMBER 2016

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- 1 Site Map with Soil Boring and Soil Vapor Point Locations

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- 1 Soil Vapor Analysis Results

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A – WORKPLAN FOR ADDITIONAL SOIL AND SOIL VAPOR SAMPLING, MAY 2016

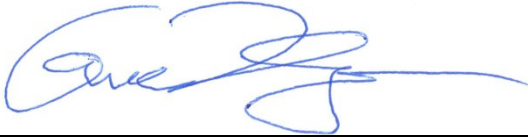
B – MODIFICATION TO WORKPLAN FOR ADDITIONAL SOIL VAPOR SAMPLING, SEPTEMBER 2016

C- ALAMEDA COUNTY PUBLIC WORKS AGENCY BORING PERMIT

D- ALS LABORATORY ANALYTICAL RESULTS

Certification

I declare under penalty of perjury that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge. Information, conclusions, and recommendations in this document have been prepared by a California Professional Geologist and a California Professional Engineer.



12/20/2016

Gwen Tellegen, P.E.
Principal Engineer

Date

December 12, 2016

Mr. Mark E. Detterman, Senior Hazardous Materials Specialist
Alameda County Environmental Health Department
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Perjury Statement Request.

"I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge."

A handwritten signature in cursive script, reading "William W. Lewerenz". The signature is written in dark ink and extends to the right with a long, sweeping tail.

William W. Lewerenz, Partner

Emeryville Properties, LLC.

1.0 INTRODUCTION AND PURPOSE

On behalf of Emeryville Properties LLC, Dudek prepared this Site Investigation Report to document the results of soil vapor sampling for methane and naphthalene in the area of the former Underground Storage Tanks (USTs) at 1400 Park Avenue in Emeryville, California (Site- see **Figure 1**). This work was conducted to satisfy all remaining criteria for case closure under the State Water Resources Control Board's (SWRCB's) Low Threat Underground Storage Tank Case Closure Policy (LTCP), and to address concerns regarding the potential presence of methane and naphthalene in soil vapor at the Site. Remediation and site closure activities at this underground storage tank (UST) site are overseen by the Alameda County Department of Environmental Health (ACDEH) under Fuel Leak Case No. RO0000398 and GeoTracker Global ID T0600102202.

This Site Investigation Report describes the drilling and sampling activities, analysis methods, and analytical results for soil vapor sampling conducted in accordance with the following work plans (attached as **Appendix A** and **Appendix B**):

- *Workplan for Additional Soil and Soil Vapor Sampling Required for Underground Storage Tank Closure, Former Charles Lowe Facility, 1400 Park Avenue, Emeryville, CA.* Report prepared by Dudek, dated May 2016 (**Appendix A**).
- *Modification to Workplan for Additional Soil and Soil Vapor Sampling Required for Underground Storage Tank Closure, Former Charles Lowe Facility, 1400 Park Avenue, Emeryville, CA.* Letter prepared by Dudek, dated September 26, 2016 (**Appendix B**).

As discussed in Section 2.0, a Site Closure Report submitted to ACDEH in August of 2015 documented the results of soil and grab groundwater sampling (for TPH, VOCs, and BTEX/oxygenates) in the immediate area of the former USTs. The August 2015 report described soil and groundwater conditions that qualified the Site for closure under the LTCP (Dudek, 2015). This report responds to subsequent ACDEH requests for additional data on methane and naphthalene concentrations in soil vapor around the USTs.

On Thursday, November 10, 2016, Dudek conducted field sampling activities at the Site in accordance with Modified Work Plan Addendum, as conditionally approved by ACDEH on September 30, 2016. Dudek oversaw vapor probe installation and sampling at the Site. TEG Northern California installed vapor probes, constructed helium vapor shrouds for leak checking and, following purging, collected soil vapor samples. As a part of this work, TEG monitored helium tracer concentrations, conducted on-site analysis of methane, CO₂ and O₂ using a GEM 2000 handheld meter and collected soil vapor samples in active sorbent tubes for stationary laboratory naphthalene analysis by EPA Method TO-17. Dudek shipped the sorbent sample tubes under chain of custody documentation to ALS Laboratories for analysis of naphthalene by EPA Method TO-17. Following the soil vapor sampling, Dudek oversaw the removal of temporary soil vapor sampling points, as required by Alameda County Public Works Agency (ACPWA). The following information is presented in this Additional Soil Vapor Sampling Report and Request for Site Closure.

- A site background including history of uses and general site setting,
- Soil vapor sampling procedures and locations,
- Results of field and laboratory soil vapor analyses,
- A request for site closure.

2.0 REGULATORY HISTORY / BACKGROUND

On July 11, 2014, Emeryville Properties and Gwen Tellegen met with Mr. Mark Detterman and provided hard copies of all previous site investigation reports for the Site as well as the No Further Action Letter for the former Chromex Facility, dated December 13, 1995 (see attachment to Workplan in **Appendix A**). At this meeting, it was determined that the Site's only outstanding issue requiring closure was the former Gasoline and Diesel/Waste Oil Underground Storage Tanks (USTs) removed from the Site on October 23, 1995. At that meeting, ACDEH requested a Workplan for the assessment of soils in the immediate vicinity of the USTs as well as a summary of the historic groundwater gradient at and surrounding the Site. ACDEH indicated that closure of the USTs would be granted if no soils impact remained in place in the immediate area of the former USTs. Later, in a January 28, 2015 conversation, Mr. Mark Detterman of ACDEH asked that a grab groundwater be collected as a part of the Closure Request for the USTs.

On February 9, 2015, Terraphase Engineering (Terraphase) submitted a Workplan to collect soil and a grab groundwater sample in the area of the former UST to address data gaps, as requested in an ACDEH letter dated the May 23, 2014 (Terraphase, 2015). On April 8, 2015, the ACDEH gave approval to a modified version of the Terraphase Workplan, requiring multiple discrete soil samples be analyzed from 0-5 and 5-10 feet below ground surface according at intervals with noted signs of contamination, that testing TPH motor oil be analyzed and that a grab groundwater sample be collected from the UST excavation area. On May 15, 2015, ACDEH issued an email stating that intact soil samples collected by hand auger is acceptable and that a grab groundwater will need to be collected if hydrocarbons are found in the hand-auger soil samples.

On June 17, 2015, Dudek collected six soil samples and one grab groundwater sample pursuant to the Terraphase Work Plan and ACDEH modified approval thereof. The results of this sampling were documented in the Site Closure Report that also presented a Site Conceptual Model that was submitted to ACDEH in August of 2015 (Dudek, 2015). No detected concentrations of BTEX or oxygenates were found in any of the soil and groundwater samples. Soil samples had TPH gasoline concentrations ranging from <0.290 mg/kg to 190 mg/kg, TPH diesel concentrations ranging from <5 mg/kg to 1500 mg/kg, and TPH motor oil concentrations ranging from 36 mg/kg to 4300 mg/kg.

No VOCs were detected in the very turbid (378 NTU) grab groundwater sample. Low levels of TPH gasoline (130 µg/L), TPH diesel (0.67 mg/L), and TPH motor oil (2.0 mg/L) were found in the grab groundwater sample collected from the temporary monitoring well which was constructed in boring HA1. Based on these sampling results, and the favorable results of a Low Threat Closure analysis, Dudek requested Site Closure (Dudek, 2015).

Following their review of the August 2015 Site Closure Report, ACDEH prepared a letter dated April 4, 2016 in which additional soil sampling and analysis for naphthalene and soil vapor sampling for methane were required. In an email dated April 19, 2016, Mr. Mark Detterman of ACDEH also requested analysis of soil vapor for naphthalene. To address concerns regarding the potential presence of methane and naphthalene in soil vapor in the area of the former USTs at the Site, Dudek submitted a Workplan for Additional Sampling in May 2016 describing procedures for soil and soil vapor sampling and analysis.

Following a meeting with ADCEH on September 20, 2016 to discuss remaining activities needed to achieve site closure, Dudek submitted a modification to the May 2016 Workplan dated September 26, 2016. The original Workplan was modified to change location, number and depth of soil vapor samples. Work described consisted of the installation of three temporary vapor probes advanced to 6.5 feet below ground surface (ft bgs) in 3 locations surrounding the former USTs and two contingency vapor probe locations far from the USTs to be sampled if elevated levels of methane were measured in any of the samples next to the former USTs. The purpose to the contingency vapor probes was to measure the potential effects of a larger area. The modified Workplan presented the results of previous testing of soils for naphthalene from the worst hydrocarbon impacted soils beneath the USTs, where naphthalene was shown to be below applicable screening levels. Accordingly, the soil sampling component was eliminated from the original Workplan. The modifications also documented DTSC approval for use of GEM 2000 meter for testing methane, oxygen and carbon dioxide, and confirmed that helium tracer would be used as a leak detection compound. ACDEH conditionally approved the modified Workplan by letter dated September 30th, 2016.

3.0 SITE BACKGROUND

3.1 Site Location and Description

The Site is located at 1400 Park Avenue in the City of Emeryville, County of Alameda, California with an Assessor Parcel Number 49-1033-2. The vicinity of the Site is generally developed with commercial/industrial properties, with one residential building found adjacent to the north of the Site. The Site is approximately 2.15 acres in size, and is developed with a 60,000 square foot building which is currently occupied by Peet's Coffee and Tea corporate offices. The rest of the Site consists of paved parking areas and is covered with concrete, asphalt or buildings, except the northeast area of the parking lot where there is a small dirt area, a hedge area, and planter boxes (about 150 square feet in size).

3.2 Geology and Hydrogeology

The Site is located near the eastern edge of the San Francisco Bay on a tidal plain (USGS, 1979). Soils found adjacent to the UST are comprised of sandy clay to a depth of approximately 10.5 feet bgs; and from 10.5 feet to 24 feet bgs there are alternating lenses of clayey sand, clayey gravel and sandy clay. The closest surface water body is the San Francisco Bay which is located 0.45 miles west of the Site. In the immediate vicinity of the former USTs at the Site, groundwater has been first encountered at depths of 9.5 to 11 feet bgs in soil borings and in the UST excavation (ASE 1995, Dudek 2015).

In four groundwater gauging events, shallow groundwater flow measured at the Site has been shown to be to the west, west-northwest and southwest (Alton Geoscience, 1995, ASE 1996, ASE, 1997, TRG 2007). Terraphase's 2015 Workplan described groundwater gradients at the Site over time. The calculated groundwater flow across the site is very low from at rates of 0.0048 to 0.007 feet per foot (Terraphase, 2015).

In January 2015, Terraphase conducted water level gauging of MW1 and MW2 which are the remaining monitoring wells at the Site. At that time it was noted that MW4 had been paved over by the construction of a new 10 foot wide sidewalk on Horton Street. The depth to groundwater at that time was measured at 5.74 to 8.35 feet bgs. The measured water elevations by Terraphase in MW1 and MW2 indicated a groundwater flow direction towards the southwest at a gradient of 0.0048 feet per foot which is consistent with the flow direction found in 2007.

3.3 Site History

The Site is the former locations of the Charles Lowe Company, which produced and repaired marine and industrial equipment at the Site from 1973 to 1991 (ASE, 1996). The portion of the Site that was investigated during this additional assessment was the immediate area of three former USTs installed in the north parking lot by the Charles Lowe Company. These USTs were discovered during Site improvement activities in 1995 after Charles Lowe moved from the property at the termination of their lease and were removed under ACDEH oversight in October 1995.

Charles Lowe also operated a minor electroplating and metal spraying facility in a small portion of the Site from 1973 until 1991. In 1992, the portion of the facility used by Chromex was dismantled and a former

below-grade concrete vault associated with Chromex's activities was removed (Alton, 1995). Based on a series of subsurface investigations, the ACDEH issued a "No Further Action" letter for the former chromium vault at the Site in December 1995 (see **Appendix A**). Between 1994 and 1996 four monitoring wells (MW-1, MW-2, MW-3 and MW-4) were installed at the Site. These monitoring wells have been monitored intermittently between 1994 and 2007. In 1995, under ACDEH oversight, soils were excavated and sampled beneath the former honing pit area (ASE, 1995). In 1997, ASE successfully abandoned a half buried 700 gallon steel Above-Ground Storage Tank (AST), which was found to contain only rainwater. No significant concentrations of petroleum hydrocarbons were detected in soil sampled from the vicinity of the tank, liquid sampled from within the tank, and groundwater sampled from MW-3 (ASE, 1997). MW-3 was properly abandoned in 1999 with ACDEH approval to accommodate the construction of a loading dock.

3.4 History of UST Removal, Soil and Groundwater Sampling

In October 1995, ASE removed three 550 gallon USTs from the Site, two of which historically contained gasoline and one contained diesel/waste oil. During the removal, the gasoline tanks were noted to be intact, but several holes were observed in the waste oil/diesel UST. ASE noted staining and odor in soils at 9 feet bgs, or 12-24" beneath the bottoms of the former USTs (ASE, 1996). To document the conditions immediately below the tanks, ASE sampled soils at 9 feet bgs. Initial samples collected from below the USTs at 9 feet below ground surface were found to contain Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) see previous report. The visually-impacted soils were over-excavated to a total depth of 12 feet bgs and confirmation samples were collected from the base of the excavation at the north and south end of the former USTs. A total of 65.29 tons of soil was removed from beneath and around the tanks. The excavation confirmation had no detected concentrations of BTEX or (see **Appendix A**) (ASE, 1996). Although groundwater began to enter the excavation at 11 feet bgs, ASE noted soil below groundwater appeared to be free of staining

After the results of the soil samples were received, ASE contacted Mr. Brian Oliva of the ACDEH, who was overseeing remediation at the sight. ASE explained the excavation and removal activities in addition to the results of the soil and groundwater sampling. Mr. Oliva concurred with ASE's recommendation to conduct no further over-excavation or soil remedial activities and Mr. Oliva agreed to allow ASE to backfill, compact and resurface the UST excavation area. The tank pit excavation was lined with visqueen and backfilled with imported soils, compacted and resurfaced with concrete (ASE, 1996).

Within two weeks of the UST removal, a groundwater sample taken from MW-1 which is located 30 feet from and down-gradient of the UST excavation. This sample had no detected Benzene, Ethylbenzene or TPH although low levels of Toluene at 4.0 ug/L and Total Xylenes at 7.8 ug/L were detected, which are far below the California Maximum Contaminant Levels (MCLs) for drinking water of 150 ug/L and 1750 ug/L for these compounds (see Appendix A, **Table 2**). Low levels of PCE, TCE and cis-1,2-DCE were also detected at concentrations consistent with other known offsite sources in the immediate vicinity of the Site, including the former Del Monte and Electro Coatings Inc. facilities. These solvents were never used at the Site

Groundwater sampling of all the monitoring wells on-Site (MW-1 through MW-4) was carried out by ASE on December 13, 1996, and MW1 was sampled again on March 21, 1997. Depth to groundwater was gauged during these events and a groundwater gradient and direction of 0.0056 feet per foot towards the west was

observed. There were no detected concentrations of TPH as gasoline, diesel, motor oil, BTEX or MTBE in any of these events in MW-1 through MW-4 (ASE, 1997).

In 2006, under ACDEH oversight, The Reynolds Group (TRG) re-developed and sampled the remaining groundwater monitoring wells at the Site. The purpose of the sampling was to obtain Site Closure for the past release of petroleum hydrocarbons and a No Further Action Letter for the three former USTs. The results of this sampling showed no detected levels of TPH gasoline, diesel, BTEX, MTBE or other fuel oxygenates in any of the groundwater samples collected from MW1, MW2 and MW4 at the Site (see **Appendix A**, Table 2). Based on the results of the sampling, Emeryville Properties requested Site closure and that a No Further Action Letter be issued for the UST case (TRG, 2007).

In response to a letter issued by ACDEH letter issued in May, 2014, a meeting between Emeryville Properties and ACDEH on July 2014 and ACDEH correspondence in January 2015, Terraphase prepared a Workplan to collect additional soil samples in the immediate vicinity of the former USTs (Terraphase, 2015). The February 9, 2015 Workplan called for soil sampling from 3 borings surrounding the former UST excavation and was designed to address data gaps, as required by ACDEH as a final step to grant Closure of the UST case. On April 8, 2015, the ACDEH gave approval to a modified version of the Terraphase Workplan, specifying that discrete soil samples be collected from the 0-5 and 5-10 feet intervals based on signs of contamination (visual, PID and odors), adding TPH motor oil as an analyte and requiring that a grab groundwater sample be collected from the UST excavation area. On May 15, 2015, ACDEH issued an email stating that intact soil samples collected by hand auger was acceptable and that collection of a grab groundwater would be required if hydrocarbons were found in the hand-auger soil samples.

Dudek conducted the soil and groundwater sampling described in the ACDEH approved modified Workplan on June 17, 2015 (Dudek, 2015). In one of the soil borings (HA2), refusal was encountered at 1.5 feet, and no soil samples were collected. In the other two soil boring locations, two samples were collected from the vadose zone (4 and 7 feet bgs in HA1; 3 and 6 feet bgs in HA3) and one sample was collected from the saturated zone in each boring (9.5 feet bgs in HA1 and 10 feet bgs in HA3).

In the 2015 investigation, no BTEX or oxygenates were detected at or above laboratory reporting limits in any of the soil samples collected and analyzed (see Appendix A). In addition, no TPH as gasoline was detected in the vadose zone soil samples. Vadose zone soil samples had TPH as diesel concentrations ranging from <5 to 53 mg/kg and TPH as motor oil concentrations ranging from 36 to 350 mg/kg. Saturated soil samples had TPH as gasoline concentrations of 2 and 190 mg/kg, TPH as diesel concentrations of 1,500 and 1,400 mg/kg, and TPH as motor oil concentrations of 4,300 and 4,200 mg/kg. Groundwater was first encountered in the soil borings at depth of 7.5 to 8 feet bgs.

A turbid (378 NTU) grab groundwater sample was collected from a temporary monitoring well screened from 7.5 to 12 feet bgs in hand auger boring HA1. BTEX and oxygenates were not detected at or above laboratory reporting limits in the 2015 grab groundwater sample (see Appendix A, **Table 2**). In this grab groundwater sample TPH as gasoline was detected at a concentration of 130 µg/L, TPH as diesel was detected at a concentration of 0.67 mg/L, and TPH as motor oil was detected at a concentration of 2.0 mg/L. Based on the results of sampling, Emeryville Properties requested that ACDEH issue a Low Threat Closure for the UST case at the Site.

4.0 DRILLING PROCEDURES AND LOCATIONS

4.1 Soil Vapor Point Locations

In response to ACDEH's request for methane and naphthalene soil vapor data, six temporary vapor probes were advanced to 6.5 feet below ground surface (ft bgs) in 4 locations surrounding the former USTs (SV1, SV2a, SV2 and SV3), and two contingency vapor probe locations were advanced in the eastern and western ends of the parking lot (SVA and SVB) to address any larger area impacts, if any were identified in the SV1- SV3 (see **Figure 1**). An additional vapor probe location, SV2a, was placed approximately 11 feet east of SV2 because access to the original location of SV2 was blocked, so that SV2 had to be moved approximately 5 feet west of the planned location. All 6 soil vapor point locations were sampled for methane, oxygen and CO₂ using a GEM 2000 handheld meter. Samples for were collected for naphthalene analysis at SV2a and SV1 since these were closest to the northerly property boundary and the adjacent residential lofts.

4.2 Pre-field Activities

A health and safety plan (HASP) for the soil vapor and soil sampling at the Site was prepared prior to the investigation activities. All personnel at the Site, including onsite subcontractors and regulatory personnel, were required to familiarize themselves with the HASP and sign an acknowledgement that they have read the HASP. The HASP identifies the chemical compounds that have been encountered at the Site. During the field work all personnel in the work area wore the proper personal protective equipment (PPE), as outlined in the HASP.

4.3 Permitting

Alameda County Public Works Agency (ACPWA) is the agency with jurisdictional responsibility for well/borehole drilling in Emeryville. The ACPWA requires a permit for boreholes of any depth greater than 3 feet bgs. Dudek completed a permit application and obtained the appropriate permit from the ACPWA before completing the proposed sampling. A copy of that that permit is attached in **Appendix C**. Dudek provided advance notice to ACPWA and ACDEH on October 29, 2016 by email that sampling activities was to be conducted on the Site on November 10th, 2016. A representative from the ACPWA was present to observe removal of boreholes.

4.4 Utility Clearance

The soil vapor sample locations were marked using white marking paint prior to the field work. Underground Service Alert of Northern California was notified at least 48-hours prior to drilling. There were no utilities in conflict with planned work. In addition, Dudek's field observations from the Site indicated that the adjacent building to the artists' lofts building to the north appeared to be built with on a thick slab with no basement, thereby indicating the planned boring depth of 6.5 feet is appropriate to meet LTCP imposed constraints (i.e., vapor collection five feet below a building foundation).

4.5 Soil Vapor Sampling Point Installation Procedures

Dudek oversaw the installation of temporary soil vapor sampling points by TEG Northern California using a direct-push rig (Strataprobe) to hydraulically push 1-inch-outer-diameter drive rods to a depth of 6.5 feet at each sampling location. Soil gas probes were set at a depth of 6.5 feet below ground surface (bgs) in each location. When the target depth was reached, temporary soil gas points were constructed within the annulus of the drive rods. The soil gas probes were constructed with a temporary airstone filter, 1/8" outer diameter Teflon tubing, and a valve at the termination. The probe tip was set within 1 foot of sand, and topped with 6 inches of dry, granular bentonite, followed by 5 feet of hydrated bentonite. The drive rods were removed as the construction of the soil gas well was completed.

At the ground surface, the tubing was fitted with an airtight valve. Traffic cones were placed adjacent to the assemblies to prevent damage prior to sampling.

Shut-In Test

Prior to purging and sampling, a shut-in test was conducted on the sampling train to check for leaks in the above-ground fittings of the sampling apparatus. The shut-in test was conducted by attaching the complete sample train assembly to the termination valve on the soil gas sampling point. With the valve attached to the soil gas point in the "off" position, a purge syringe or vacuum pump was used to evacuate the sample train of air to a minimum measured vacuum of approximately 100 inches of water. The vacuum was observed on an in-line vacuum gauge which was positioned prior to the purge syringe or vacuum pump. The vacuum gauge was observed for one minute and all above ground connections were considered air-tight because the pressure on the gauge did not noticeably dissipate.

Leak Test

A leak test was performed on each individual soil gas sampling point in order to verify the integrity of the entire sampling system. Helium was used as a gaseous leak check compound to evaluate sample integrity. A shroud was placed over the entire sampling system, including the sampling container and the soil gas well annulus. The shroud was infused with the 20% helium for at least five minutes prior to purging to allow for the tracer compound to equilibrate. Gaseous tracer concentration inside the shroud was monitored using a handheld helium detector (Ion Gas Check) to ensure that a concentration of 20% helium was maintained. Tracer concentration was measured using the handheld meter in samples collected during purging and after purging and before sample collection to check for leaks, and no helium was detected (< 0.05%). This indicated that no leaks existed any of the sampling points.

Soil Gas Purging

In accordance with DTSC guidance, the purpose of the purging activities is to remove stagnant soil gas in the soil gas well tubing and screen prior to sample collection. Three purge volumes (154 CCs) were extracted prior to vapor sampling. No water was entrained in the sampling system during purging or sampling. Soil gas samples were successfully recovered from 6.5 feet bgs depth in all sampling locations.

Soil Gas Sampling Procedure

As specified in the Department of Toxic Substances Control Board (DTSC) 2015 Advisory on Active Soil Gas Investigations, the soil vapor samples were collected from the installed vapor points a minimum of two hours after their installation. Three tubing and sand pack volumes were purged from the soil vapor sampling point using a calibrated syringe. Then, a sample was collected in the sorbent tube using calibrated syringe. Air flow rate through the tube was monitored during sampling, and did not vary by more than 10%. A flow rate of less than 200 milliliters per minute was maintained throughout sampling. During the monitoring event, the concentrations of methane, oxygen and CO₂ were measured in each of the sample points (SV1, SV2, SV2a, SV3, SVA, and SVB) using a GEM-2000 Plus. The GEM-2000 Plus is capable of detecting methane to a concentration of 0.1% by volume. The meter was calibrated using manufacturers specifications prior to use in the field.

Soil vapor samples from 3 soil vapor points (SV1, SV2, SV2a) were collected for analysis of naphthalene using Method TO-17 in active sorbent tubes provided by the analytical laboratory. A measured volume of soil vapor, 200 CCs, was pulled through the vapor canister using a clean calibrated syringe. The sorbent tubes were then capped and placed into sealed zip lock bags and placed into a cooler for shipment to ALS Laboratories.

Temporary Soil Gas Point Decommissioning

At the request of the inspector with ACPW what was on-Site, decommissioning of the temporary soil gas wells consisted of pulling soil gas probes, removing all bentonite, and replacing the bentonite with Portland cement.

Disposal of drill cuttings and bentonite

All drill cuttings, sand and bentonite were placed in a 55-gallon drum located on-Site, Dudek labeled the drum which will be properly disposed of off-Site at the same time as wastes generated during the abandonment of the on-Site monitoring wells, following receipt of ACDEH's No Further Action Letter for the Site.

4.6 Soil Vapor Sample Analyses

Samples from the 6 soil vapor points (SV1, SV2, SV2a, SV3, SVA, and SVB) were collected and analyzed for methane, CO₂ and O₂ analysis using a GEM 2000 meter. Recorded concentrations for each sample point were recorded 1 minute after purging and at 3 minutes. Samples to be analyzed for naphthalene using EPA Method TO-17 were collected from SV1, SV2, and SV2a. Chain of custody forms and laboratory results are provided in **Appendix D**.

5.0 ANALYTICAL RESULTS

The results of the field and laboratory analyses of the soil vapor samples are provided below in **Table 1 and in Appendix D**.

No methane was detected in any of the soil vapor samples analyzed from the 6 soil vapor probes installed on-site. Thus, methane does not pose threat to the Site.

No naphthalene (<0.48 micrograms per cubic meter [ug/m³]) was detected in SV2a, which was the sample location closest to the neighboring residential structure. Very low levels of naphthalene, 0.82 ug/m³ and 3.3 ug/m³, were detected in SV1 and SV2, respectively. These concentrations are significantly less than Soil Gas Criteria in the Low Threat Closure Policy of 93 ug/m³ for residential uses and 310 ug/m³ for commercial uses, assuming No Bioattenuation Zone (Appendix 4 or Page 14 of the LTCP). In the LTCP, it is stated that screening level concentrations of naphthalene are considered to have no significant risk of adversely affecting human health. Since the low concentrations of naphthalene detected at the Site are more than an order of magnitude less than the LTCP screening levels, no significant health risk related to these detections.

Table 1 – Soil Vapor Analysis Results

Sample Name	Sample Depth (feet bgs)	Sample Date		GEM 2000			TO17
				CH ₂	CO ₂	O ₂	Naphthalene (ug/m ³)
SV1	6	11/10/2016	Initial	0.0%	14.9%	1.5%	4.3
			Final	0.0%	15%	1.5%	
SV2	6	11/10/2016	Initial	0.0%	12.2%	7.3%	3.3
			Final	0.0%	12.3%	7.2%	
SV2a	6	11/10/2016	Initial	0.0%	10.2%	8.5%	<0.48
			Final	0.0%	10.5%	8.4%	
SV3	6	11/10/2016	Initial	0.0%	13.6%	20.4%	--
			Final	0.0%	13.7%	00.2%	
SVA	6	11/10/2016	Initial	0.0%	0.0%	21.2%	--
			Final	0.0%	8.1%	9.0%	
SVB	6	11/10/2016	Initial	0.0%	0.0%	21%	--
			Final	0.0%	2.6%	16.9%	
LTCP Soil Vapor Screening Level – Residential Land Use							93
LTCP Soil Vapor Screening Level – Commercial Land Use							310

6.0 REQUEST FOR SITE CLOSURE

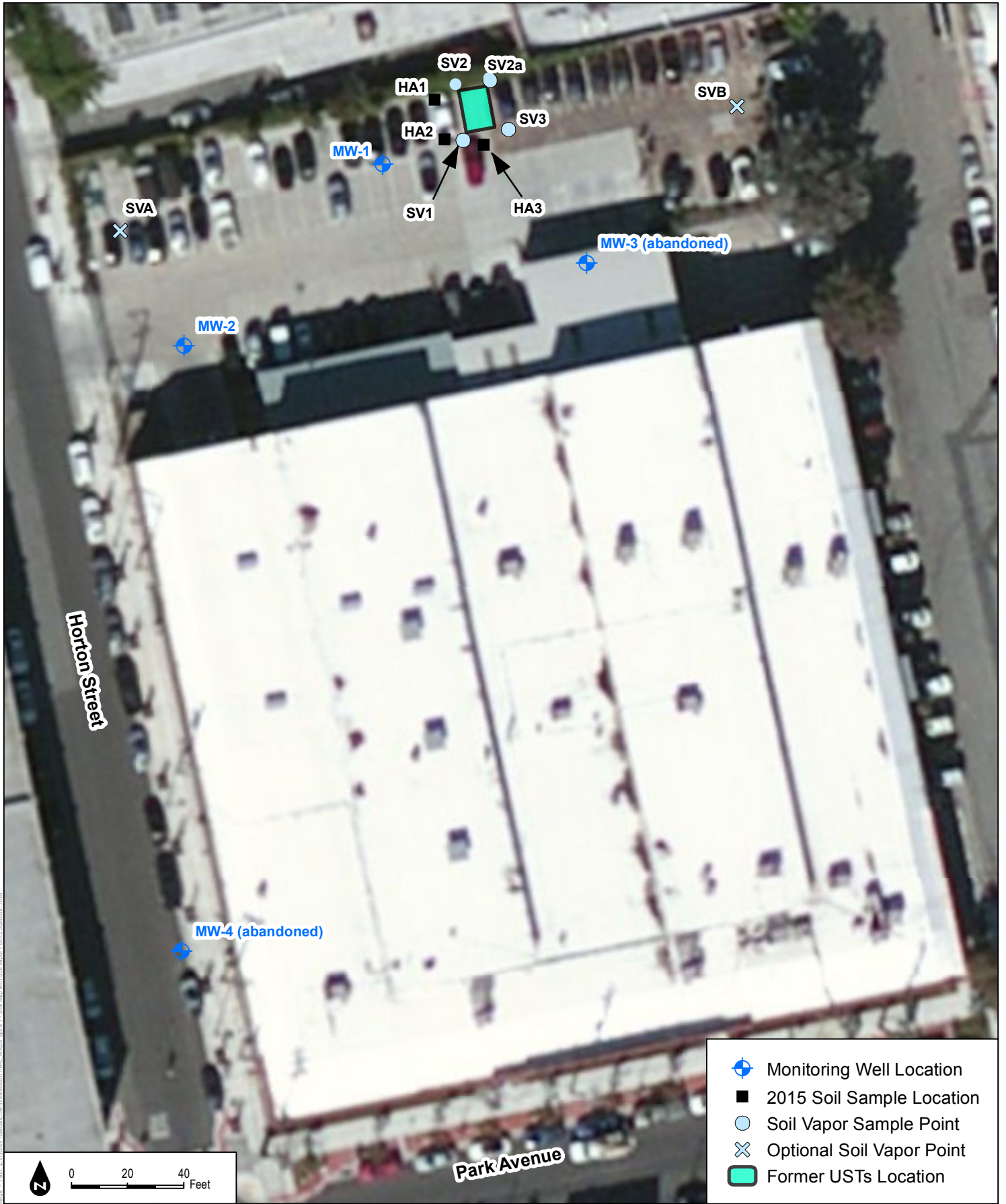
On behalf of Emeryville Properties LLC, Dudek requests that the Site closure be granted with a No Further Action Letter issued by ACDEH for the Site. The rationale for site closure is provided in *Results of Shallow Soil and Grab Groundwater Sampling and UST Closure Report* by Dudek dated August 2015. This report documents the remaining work needed to satisfy the criteria established in the LTCP guidelines, and to respond to ACDEH concerns regarding the potential presence of methane and naphthalene in soil vapor in the area of the former Underground Storage Tanks (USTs) at the Site. This report shows no detected concentrations of methane in soil vapor, and concentrations of naphthalene to be below the applicable thresholds in the LTCP.






Upon the approval of Site closure, the remaining groundwater monitoring wells will be abandoned according to Alameda County Public Works Agency standards. All investigation-derived waste will be characterized, profiled and properly disposed of off Site.

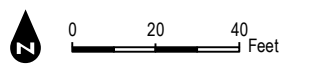
REFERENCES

- Alameda County Health Care Services Agency (ACHCSA/ACDEH). December 13, 1995. Closure Letter for the Investigation of the Chromium Vault, Former Chromex/Charles Lowe Facility, 1400 Park Avenue, Emeryville, California.
- Alton Geoscience. May 17, 1995. Supplementary Site Assessment Report, Former Chromex Facility, 1400 Park Avenue, Emeryville, California
- Aqua Science Engineers (ASE), Inc. March 21, 1997. Groundwater Monitoring Report Sampling at Emeryville Properties, 1400 Park Avenue, Emeryville, California.
- ASE, January 12, 1996. Project Report – Underground Storage Tank Removal for Emeryville Properties, 1400 Park Avenue, Emeryville, California.
- ASE, December 2, 1996. Workplan for Soil and Groundwater Assessment at 1400 Park Avenue, Emeryville, California.
- ASE, January 28, 1997. Project Report – Half-Buried Tank Abandonment for Emeryville Properties, 1400 Park Avenue, Emeryville California.
- ASE, March 7, 1997. Report on Soil and Groundwater Assessment at Emeryville Properties, 1400 Park Avenue, Emeryville, California.
- ASE, Inc. March 26, 1999. Letter to Mr. Jeremy Ross, Peet’s Coffee, 1400 Park Avenue, Emeryville, California.
- Department of Toxic Substance Control, July 2015. Advisory – Active Soil Gas Investigations.
- Dudek 2015. *Results of Shallow Soil and Grab Groundwater Sampling and UST Closure Report, Former Charles Lowe Facility, 1400 Park Avenue, Emeryville, California*. Prepared for Emeryville Properties. March 2015.
- The Reynolds Group (TRG). January 31, 2007. Groundwater Well Redevelopment and Sampling Report – Request for Site Closure – 1400 Park Avenue, Emeryville, California.
- Terraphase Engineering. February 9, 2015. Workplan for Underground Storage Tank Closure - Former Charles Lowe Facility, 1400 Park Avenue, Emeryville, California.
- U.S. Geological Survey (USGS). Professional Paper 943, Helley, E.S., Laijoie, K.R., Spangle, W.E., and Blair, M.L. 1979. Flatland Deposits of the San Francisco Bay Region, California:
- USGS. 1957. Aerial and Engineering Geology of the Oakland west quadrangle, CA. By Radbruch, D.H. Miscellaneous Geologic Investigations Map I-239. USGS National Geologic Map Database Website. http://ngmdb.usgs.gov/ngm-bin/pdp/zui_pdpViewer.pl?id=19733. January 23.

FIGURE



-  Monitoring Well Location
-  2015 Soil Sample Location
-  Soil Vapor Sample Point
-  Optional Soil Vapor Point
-  Former USTs Location



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

1400 Park Avenue, Emeryville, California

FIGURE 1
Site Map with Soil Vapor Point Locations

November 2016

D:\11772615 - Lead - 2016\Projects\Emeryville\MO2\FINAL_11772615.mxd - Site Map with Soil Vapor Point Locations.mxd

APPENDICES

APPENDIX A

*Workplan for Additional Soil and Soil Vapor
Sampling – 1400 Park Avenue, Emeryville, CA,
May 2016*

WORKPLAN FOR ADDITIONAL SOIL AND SOIL VAPOR SAMPLING REQUIRED FOR UNDERGROUND STORAGE TANK CLOSURE

**Former Charles Lowe Facility
1400 Park Avenue, Emeryville, California**

Prepared for:

Emeryville Properties

1400 Park Avenue
EMERYVILLE, CALIFORNIA 94608-0445

Prepared by:

DUDEK

605 Third Street
Encinitas, California 92024



Gwen Tellegen, P.E.
Principal Engineer

MAY 2016

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FIGURES

- 1 Site Map with Soil Boring and Soil Vapor Point Locations

TABLES

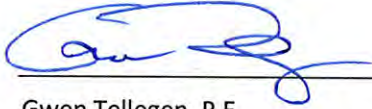
- 1 Soil Samples Collected in Vicinity of former USTs
- 2 Groundwater Sample Results

APPENDICES

A-CLOSURE LETTER LETTER FOR CHROMEX VAULT - DECEMBER 13, 1995

Certification

I declare under penalty of perjury that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge. Information, conclusions, and recommendations in this document have been prepared by a California Professional Geologist and a California Professional Engineer.



Gwen Tellegen, P.E.
Principal Engineer

S-5-2016

Date



May 5, 2016

Mr. Mark E. Detterman,
Senior Hazardous Materials Specialist Alameda County
Environmental Health Department Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA.94502-6577

Re: Perjury Statement Request.

"I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge."



William W. Lewerenz, Partner

Emeryville Properties, LLC.

1.0 INTRODUCTION AND PURPOSE

On behalf of Emeryville Properties LLC, Dudek has prepared this Workplan describing the vapor sampling and analysis procedures used to collect and analyze soil vapor samples (for methane and naphthalene) and soil samples (for naphthalene) at the Site located at 1400 Park Avenue in Emeryville, California (Site- see **Figure 1**). On April 4, 2016, as a final step in the Site Closure process, Alameda County Department of Environmental Health (ACDEH) issued a letter requesting the preparation of a Workplan describing soil vapor sampling and analysis procedures. This Workplan required by ACDEH to address additional agency concerns regarding the potential presence of methane and naphthalene in soil vapor in the area of the former Underground Storage Tanks (USTs) at the Site. In an email dated April 19, 2016, ACDEH also requested the collection and analysis of soil samples for naphthalene from locations adjacent to the previous UST hand auger borings that had detected levels of TPH.

The purpose of this work is to obtain Site Closure on the UST case since this data on methane and naphthalene concentrations in soil vapor will be last information required by ACDEH to meet the criteria for the State Water Resources Control Board's Low Threat Underground Storage Tank Case Closure Policy (LTCP) at the Site.

This Workplan proposes collecting soil vapor from temporary soil vapor monitoring points installed at four locations adjacent to the former USTs at the Site. As requested by ACDEH, the soil vapor points will be installed at five feet below ground surface (bgs) and all four vapor samples will be analyzed for methane and naphthalene. In addition, soil samples collected from locations adjacent to the highest TPH detections in vadose zone soils found in during the 2015 soils investigation conducted by Dudek .

The following information is presented in this Work Plan:

- A site background including history of uses and general site setting,
- Soil vapor and soil sampling procedures and locations,
- Laboratory analyses of samples,
- Data presentation in a report with tables and maps
- A request for site closure follow the completion of this Workplan

1.1 Regulatory History

On July 11, 2014, Emeryville Properties and Gwen Tellegen met with Mr. Mark Detterman and provided hard copies of all previous site investigation reports for the Site as well as the No Further Action Letter for the former Chromex Facility, dated December 13, 1995 (See **Appendix A**). At this meeting, it was determined that the only Site's only outstanding issue requiring closure was the former Gasoline and Diesel/Waste Oil Underground Storage Tanks (USTs) removed from the Site on October 23, 1995. At that meeting, ACDEH requested a Workplan for the assessment of soils in the immediate vicinity of the USTs as well as a summary of the historic groundwater gradient at and surrounding the Site. ACDEH indicated that closure of the USTs would be granted if no soils impact remained in place in the immediate area of the former USTs. Later, in a January 28, 2015 conversation, Mr. Mark Detterman of ACDEH asked that a grab groundwater be collected as a part of the Closure Request for the USTs.

On February 9, 2015, Terraphase Engineering (Terraphase) submitted a Workplan to collect soil and a grab groundwater sample in the area of the former UST to address data gaps, as requested in an ACDEH letter dated the May 23, 2014 (Terraphase, 2015). On April 8, 2015, the ACDEH gave approval to a modified version of the Terraphase Workplan, requiring multiple discrete soil samples be analyzed from 0-5 and 5-10 feet below ground surface according at intervals with noted signs of contamination, that testing TPH motor oil be analyzed and that a grab groundwater sample be collected from the UST excavation area. On May 15, 2015, ACDEH issued an email stating that intact soil samples collected by hand auger is acceptable and that a grab groundwater will need to be collected if hydrocarbons are found in the hand-auger soil samples.

1.2 Soil and Groundwater Sampling Conducted in 2015

On June 17, 2015, Dudek collected six soil samples and one grab groundwater sample pursuant to the Terraphase Work Plan and ACDEH modified approval thereof. The results of this sampling were documented in the Site Closure Report that also presented a Site Conceptual Model that was submitted to ACDEH in August of 2015 (Dudek, 2015). No detected concentrations of BTEX or oxygenates were found in the soil and groundwater samples. Soil samples had TPH gasoline concentrations ranging from <0.290 mg/kg to 190 mg/kg, TPH diesel concentrations ranging from <5 mg/kg to 1500 mg/kg, and TPH motor oil concentrations ranging from 36 mg/kg to 4300 mg/kg.

No VOCs were detected in the very turbid (378 NTU) grab groundwater sample. Low levels of TPH gasoline (130 µg/L), TPH diesel was (0.67 mg/L), and TPH motor oil (2.0 mg/L) were found in the grab groundwater sample collected from the temporary monitoring well which was constructed in boring HA1. Based on these sampling results, and the favorable results of a Low Threat Closure analysis, Dudek requested Site Closure (Dudek, 2015).

Following their review of the August 2015 Site Closure Report, ACDEH prepared a letter dated April 4, 2016 in which additional soil sampling and analysis for naphthalene and soil vapor sampling for methane were required. In an email dated April 19, 2016, Mr. Mark Detterman of ACDEH also requested analysis of soil vapor for naphthalene.

2.0 SITE BACKGROUND

2.1 Site Location and Description

The Site is located at 1400 Park Avenue in the City of Emeryville, County of Alameda, California with an Assessor Parcel Number 49-1033-2. The vicinity of the Site is generally developed with commercial/industrial properties, with one residential building found adjacent to the north of the Site (see **Figure 1**).

The Site is approximately 2.15 acres in size, and is developed with a 60,000 square foot building which is currently occupied by Peet's Coffee and Tea corporate offices. The rest of the Site consists of paved parking areas and is covered with concrete, asphalt or buildings, except the northeast area of the parking lot where there is a small dirt area, a hedge area, and planter boxes (about 150 square feet in size).

2.2 Geology and Hydrogeology

The Site is located near the eastern edge of the San Francisco Bay on a tidal plain (USGS, 1979). Soils found adjacent to the UST are comprised of sandy clay to a depth of approximately 10.5 feet bgs; and from 10.5 feet to 24 feet bgs there are alternating lenses of clayey sand, clayey gravel and sandy clay. The closest surface water body is the San Francisco Bay which is located 0.45 miles west of the Site. In the immediate vicinity of the former USTs at the Site, groundwater has been first encountered at depths of 9.5 to 11 feet bgs in soil borings and in the UST excavation (ASE 1995, Dudek 2015).

In four groundwater gauging events, shallow groundwater flow measured at the Site has been shown to be to the west, west-northwest and southwest (Alton Geoscience, 1995, ASE 1996, ASE, 1997, TRG 2007). Terraphase's 2015 Workplan described groundwater gradients at the Site over time. The calculated groundwater flow across the site is very low from at rates of 0.0048 to 0.007 feet per foot. (Terraphase, 2015).

In January 2015, Terraphase conducted water level gauging of MW1 and MW2 which are the remaining monitoring wells at the Site. At that time it was noted that MW4 had been paved over by the construction of a new 10 foot wide sidewalk on Horton Street. The depth to groundwater at that time was measured at 5.74 to 8.35 feet bgs. The measured water elevations by Terraphase in MW1 and MW2 indicated a groundwater flow direction towards the southwest at a gradient of 0.0048 feet per foot which is consistent with the flow direction found in 2007.

Site History

The Site is the former locations of the Charles Lowe Company, which produced and repaired marine and industrial equipment at the Site from 1973 to 1991 (ASE, 1996). The portion of the Site that will be investigated during this assessment is the immediate area of three former USTs installed in the north parking lot by the Charles Lowe Company. These USTs were discovered during Site improvement activities in 1995 after Charles Lowe moved from the property at the termination of their lease and were removed under ACDEH oversight in October 1995.

Charles Lowe also operated a minor electroplating and metal spraying facility in a small portion of the Site from 1973 until 1991. In 1992, the portion of the facility used by Chromex was dismantled and a former

below-grade concrete vault associated with Chromex’s activities was removed (Alton, 1995). Based on a series of subsurface investigations, the ACDEH issued a “No Further Action” letter for the former chromium vault at the Site in December 1995 (see **Appendix A**). Between 1994 and 1996 four monitoring wells (MW-1, MW-2, MW-3 and MW-4) were installed at the Site. These monitoring wells have been monitored intermittently between 1994 and 2007. In 1995, under ACDEH oversight, soils were excavated and sampled beneath the former honing pit area (ASE, 1995). In 1997, ASE successfully abandoned a half buried 700 gallon steel Above-Ground Storage Tank (AST), which was found to contain only rainwater. No significant concentrations of petroleum hydrocarbons were detected in soil sampled from the vicinity of the tank, liquid sampled from within the tank, and groundwater sampled from MW-3 (ASE, 1997). MW-3 was properly abandoned in 1999 with ACDEH approval to accommodate the construction of a loading dock.

2.3 Surrounding Land Uses

The surrounding properties and building construction types, as identified by Mr. William Lewerenz of Emeryville properties are described in the table below :

Figure ID Number	Property Name/Tenant Name	Address	Direction from the Site	Building Construction	Current Building Use/Comments
1	Horton Street Lofts	4250 and 4300 Horton Street	North	Masonry brick with slab floor; no basement	Residential artist lofts
2a	VN Shipping	4225 Horton Street	West-northwest	Concrete tilt-up with slab floor; no basements observed	Warehouse
2b	VS Shipping	4221 Horton Street	West	Concrete tilt-up with slab floor; no basement observed	Warehouse
2c	Elemental Led, Inc.	1460 Park Avenue	West-southwest	Concrete tilt-up with slab floor; no basement observed	LED lighting distributor
3	T.D.P. East Bay Partners, LLC	1450 Sherwin Avenue	Northwest	Masonry brick with slab; no basement	Former Sherwin-Williams Paint manufacturing plant; currently awaiting planning and permit approval for redevelopment as office space and mixed use.

2.4 History of UST Removal, Soil and Groundwater Sampling

In October 1995, ASE removed three 550 gallon USTs from the Site, two of which historically contained gasoline and one contained diesel/waste oil. During the removal, the gasoline tanks were noted to be intact, but several holes were observed in the waste oil/diesel UST. ASE noted staining and odor in soils at 9 feet bgs, or 12-24" beneath the bottoms of the former USTs (ASE, 1996). To document the conditions immediately below the tanks, ASE sampled soils at 9 feet bgs. Initial samples collected from below the USTs at 9 feet below ground surface were found to contain Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) (see **Table 1**). The visually-impacted soils were over-excavated to a total depth of 12 feet bgs and confirmation samples were collected from the base of the excavation at the north and south end of the former USTs. A total of 65.29 tons of soil was removed from beneath and around the tanks. The excavation confirmation had no detected concentrations of BTEX or TPH (gasoline, diesel, motor oil) see **Table 1** (ASE, 1996). Although groundwater began to enter the excavation at 11 feet bgs, ASE noted soil below groundwater appeared to be free of staining

After the results of the soil samples were received, ASE contacted Mr. Brian Oliva of the ACDEH, who was overseeing remediation at the site. ASE explained the excavation and removal activities in addition to the results of the soil and groundwater sampling. Mr. Oliva concurred with ASE's recommendation to conduct no further over-excavation or soil remedial activities, with respect to the USTs, and Mr. Oliva agreed to allow ASE to backfill, compact and resurface the excavation. The tank pit excavation was lined with visquene and backfilled with imported soils, compacted and resurfaced with concrete (ASE, 1996).

Within two weeks of the UST removal, a groundwater sample taken from MW-1 which is located 30 feet from and down-gradient of the UST excavation. This sample had no detected Benzene, Ethylbenzene or TPH although low levels of Toluene at 4.0 ug/L and Total Xylenes at 7.8 ug/L were detected, which are far below the California Maximum Contaminant Levels (MCLs) for drinking water of 150 ug/L and 1750 ug/L for these compounds (see **Table 2**). Low levels of PCE, TCE and cis-1,2-DCE were also detected at concentrations consistent with other known offsite sources in the immediate vicinity of the Site, including the former Del Monte and Electro Coatings Inc. facilities. These solvents were never used at the Site

Groundwater sampling of all the monitoring wells on-Site (MW-1 through MW-4) was carried out by ASE on December 13, 1996, and MW1 was sampled again on March 21, 1997. Depth to groundwater was gauged during these events and a groundwater gradient and direction of 0.0056 feet per foot towards the west was observed. There were no detected concentrations of TPH as gasoline, diesel, motor oil, BTEX or MTBE in any of these events in MW-1 through MW-4 (ASE).

In 2006, under ACDEH oversight, The Reynolds Group (TRG) re-developed and sampled the remaining groundwater monitoring wells at the Site. The purpose of the sampling was to obtain Site Closure for the past release of petroleum hydrocarbons and a No Further Action Letter for the three former USTs. The results of this sampling showed no detected levels of TPH gasoline, diesel, BTEX, MTBE or other fuel oxygenates in any of the groundwater samples collected from MW1, MW2 and MW4 at the Site (see **Table 2**). Based on the results of the sampling, Emeryville Properties requested Site closure and that a No Further Action Letter be issued for the UST case. (TRG, 2007)

In response to a letter issued by ACDEH letter issued in May, 2014, a meeting between Emeryville Properties and ACDEH on July 2014 and ACDEH correspondence in January 2015, Terraphase prepared a Workplan to collect additional soil samples in the immediate vicinity of the former USTs (Terraphase, 2015). The February 9, 2015 Workplan called for soil sampling from 3 borings surrounding the former UST excavation and was designed to address data gaps, as required by ACDEH as a final step to grant Closure of the UST case. On April 8, 2015, the ACDEH gave approval to a modified version of the Terraphase Workplan, specifying that discrete soil samples be collected from the 0-5 and 5-10 feet intervals based on signs of contamination (visual, PID and odors), adding TPH motor oil as an analyte and requiring that a grab groundwater sample be collected from the UST excavation area. On May 15, 2015, ACDEH issued an email stating that intact soil samples collected by hand auger was acceptable and that collection of a grab groundwater would be required if hydrocarbons were found in the hand-auger soil samples.

Dudek conducted the soil and groundwater sampling described in the ACDEH approved modified Workplan on June 17, 2015 (Dudek, 2015). In one of the soil borings (HA2), refusal was encountered at 1.5 feet, and no soil samples were collected. In the other two soil boring locations, two samples were collected from the vadose zone (4 and 7 feet bgs in HA1; 3 and 6 feet bgs in HA3) and one sample was collected from the saturated zone in each boring (9.5 feet bgs in HA1 and 10 feet bgs in HA3).

In the 2015 investigation, no BTEX or oxygenates were detected at or above laboratory reporting limits in any of the soil samples collected and analyzed (see **Table 1**). In addition, no TPH as gasoline was detected in the vadose zone soil samples. Vadose zone soil samples had TPH as diesel concentrations ranging from <5 to 53 mg/kg and TPH as motor oil concentrations ranging from 36 to 350 mg/kg. Saturated soil samples had TPH as gasoline concentrations of 2 and 190 mg/kg, TPH as diesel concentrations of 1,500 and 1,400 mg/kg, and TPH as motor oil concentrations of 4,300 and 4,200 mg/kg. Groundwater was first encountered in the soil borings at depth of 7.5 to 8 feet bgs.

A turbid (378 NTU) grab groundwater sample was collected from a temporary monitoring well screened from 7.5 to 12 feet bgs in hand auger boring HA1. BTEX and oxygenates were not detected at or above laboratory reporting limits in the 2015 grab groundwater sample (see **Table 2**). In this grab groundwater sample TPH as gasoline was detected at a concentration of 130 µg/L, TPH as diesel was detected at a concentration of 0.67 mg/L, and TPH as motor oil was detected at a concentration of 2.0 mg/L. Based on the results of sampling, Emeryville Properties requested that ACDEH issue a Low Threat Closure for the UST case at the Site.

3.0 DRILLING PROCEDURES AND LOCATIONS

3.1 Pre-field Activities

A health and safety plan (HASP) for the soil vapor and soil sampling at the Site will be prepared prior to the investigation activities. All personnel at the Site, including onsite subcontractors and regulatory personnel, will be required to familiarize themselves with the HASP and sign an acknowledgement that they have read the HASP. The HASP will identify the chemical compounds that have been encountered at the Site. During the field work all personnel in the work area will wear the proper personal protective equipment (PPE), as outlined in the HASP.

3.2 Permitting

Alameda County Public Works Agency (ACPWA) is the agency with jurisdictional responsibility for well/borehole drilling in Emeryville. The ACPWA requires a permit for boreholes of any depth greater than 3 feet bgs. Dudek will complete a permit application and obtain the appropriate permit from the ACPWA before completing the proposed sampling and will provide ACPWA and ACDEH with the exact date and time of the sampling activities at least one week in advance to the work.

3.3 Utility Clearance

The soil vapor sample locations will be marked using white marking paint prior to the field work. Underground Service Alert of Northern California will be notified at least 48-hours prior to drilling.

3.4 Soil Vapor Sampling Point Installation Procedures

To install the temporary soil vapor sampling points, a direct-push rig will hydraulically push 1.5-inch-outer-diameter drive rods to the maximum depth at each sampling location. Soil gas probes will be set at a depth of approximately 5 feet below ground surface (bgs) in each location. When the target depth is reached, the temporary soil gas point will be constructed within the annulus of the drive rods. The soil gas probe will be constructed with a temporary airstone filter, 1/4" outer diameter Teflon tubing (0.187 inch inner diameter), and a valve at the termination. The probe tip will be set within a minimum of 6 inches of sand, and topped with a minimum of one foot of dry, granular bentonite, followed by hydrated bentonite per the DTSC Guidelines (DTSC 2015). Hydrated bentonite or a bentonite-cement grout will be used to fill the remaining annulus to 0.5 foot bgs. The drive rods will be removed as the construction of the soil gas well is completed.

At the ground surface, the tubing will be fitted with an airtight valve. The assembly will be covered with a traffic cone to prevent damage prior to sampling.

Shut-In Test

Prior to purging and sampling, a shut-in test will be conducted on the sampling train to check for leaks in the above-ground fittings of the sampling apparatus. The shut-in test is conducted by attaching the complete sample train assembly to the termination valve on the soil gas sampling point. With the valve attached to the soil gas point in the "off" position, a purge syringe or vacuum pump is used to evacuate the sample train of air to a minimum measured vacuum of approximately 100 inches of water. The vacuum is observed on an in-line

vacuum gauge which is positioned prior to the purge syringe or vacuum pump. The vacuum gauge is observed for one minute and all above ground connections are considered air-tight if the pressure on the gauge does not noticeably dissipate. If there is an observable loss in vacuum, the fittings in the sample assembly will be checked and tightened and the system re-tested. Sampling of the soil gas point will not begin until the system is considered air-tight.

Leak Test

A leak test will be performed on each individual soil gas sampling point in order to test the integrity of the entire sampling system. A gaseous leak check compound helium, will be used to evaluate sample integrity. A shroud will be placed over the entire sampling system, including the sampling container and the soil gas well annulus. The shroud will be infused with the tracer compound for at least five minutes prior to purging to allow for the tracer compound to equilibrate. Gaseous tracer concentration inside the shroud will be monitored using a helium detector frequently for the duration of purging and sampling to ensure that a suitable minimum tracer concentration is maintained. Tracer concentration will be measured during purging to check for leaks, and if concentration in the purge sample is $\geq 5\%$ of the concentration in the shroud, corrective action will be taken to remedy the leak in the soil vapor well prior to the collection of soil gas samples.

Soil Gas Purging

In accordance with DTSC guidance, the purpose of the purging activities is to remove stagnant soil gas in the soil gas well tubing and screen prior to sample collection. Three purge volumes will be extracted prior to vapor sampling. If water is entrained in the sampling system during purging or sampling, the sampling will be discontinued. A note will be made on the field form that the soil gas sample was unrecoverable. If it is not possible to recover a soil gas sample from the initial 5 feet bgs depth due to tight soils and excess vacuum conditions, another attempt to install the vapor probe at a depth of 4 or 6 feet bgs will be made.

Soil Gas Sampling Procedure

Soil vapor samples will be collected for analysis of naphthalene concentrations using Method TO-17 in active sorbent tubes provided by the analytical laboratory. A measured volume of soil vapor, as specified in the directions provided by the sorbent tube, will be pulled through the vapor canister using a clean calibrated syringe.

Soil vapor samples for methane and oxygen analysis will be collected in Tedlar bags using clean calibrated syringe and shipped to a stationary laboratory for analysis using EPA Method 3C within 72 hours of their collection.

As specified in the Department of Toxic Substances Control Board (DTSC) 2015 Advisory on Active Soil Gas Investigations, the soil vapor samples will be collected from the installed vapor points a minimum of two hours after their installation. Three tubing and sand pack volumes will be purged from the soil vapor sampling point using a calibrated syringe. Then, a sample will be collected in the sorbent tube using calibrated syringe. Air flow rate through the tube will be monitored during sampling, and will not vary by more than 10%. A flow rate of less than 200 milliliters per minute will be maintained throughout sampling. During the monitoring event, the concentrations of methane will be measured in each of the 4 sample points using a GEM-2000 Plus. The GEM-2000 Plus is capable of detecting methane to a concentration of 0.1% by volume.

Temporary Soil Gas Point Decommissioning

Decommissioning of the temporary soil gas wells will be conducted in accordance with the DTSC Guidance and will consist of the following steps:

- 1) Well tubing will be pulled from the sub surface;
- 2) The open hole will be filled with hydrated bentonite to within one foot of the surface grade;
- 3) Concrete will be placed in the top foot of the boring.

3.5 Soil Vapor Point Locations

To satisfy the ACDEH request for methane and naphthalene soil vapor data, 4 soil vapor borings will be located around the former excavation area surrounding the removed USTs in the estimated perimeter area the tank excavation (see **Figure 2**). These soil vapor sampling locations will provide sufficient information to determine if levels of methane or naphthalene above concern levels remain in place in the vicinity of the USTs.

3.6 Soil Vapor Sample Analyses

Samples from the 4 soil vapor points will be collected for methane analysis by a GEM 2000 meter and for laboratory analysis using EPA Method 3C. Samples for naphthalene from 3 of the soil vapor points will be analyzed using EPA Method TO-17. Chain of custody procedures will be followed in transporting the samples to the analytical laboratory.

3.7 Soil Sampling

Soil samples will be collected from borings adjacent to the HA1 and HA3 borings advanced in 2015 for analysis of naphthalene concentrations using EPA Method 8270. Using a direct push drill rig, intact soil samples will be collected in acetate or stainless steel sleeves. The ends of the sample tubes will be covered with Teflon sheeting and then capped and placed into ziplock bags and placed into a cooler for shipment to the analytical laboratory. Chain of custody procedures will be followed in transporting the samples to the analytical laboratory.

Soil samples will be collected at the depth of highest TPH concentration detected in vadose zone soils during the 2015 soil sampling conducted by Dudek. One sample will be collected adjacent to sample HA1-4' and one sample will be collected adjacent to sample HA3-6'.

3.8 Site Investigation Schedule

The Site investigation will proceed within 15 days of authorization from the ACCEH.

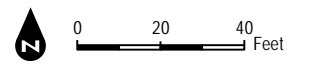
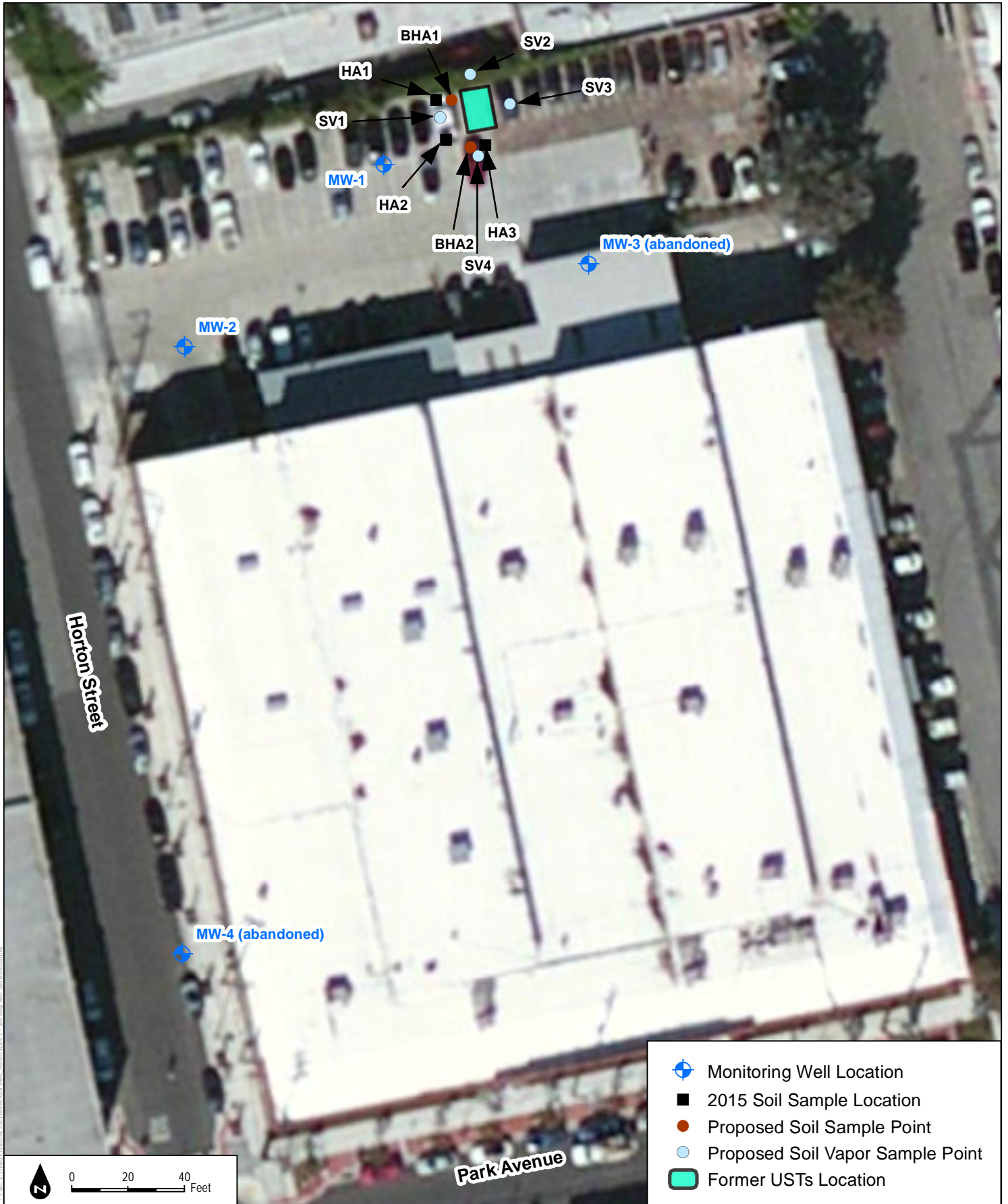
3.9 Data Evaluation and Reporting

A Soil Vapor Sampling Report and a Site Closure Report will be submitted to the ACDEH and will include tables, figures, and sample results. Any detected levels of methane and naphthalene will be compared the LEL and UEL for methane to USEPA Region 9 Screening Levels for naphthalene. In addition, Dudek will upload the data to the SWRCB Geotracker on-line database and to the Alameda County FTP Site.

REFERENCES

- Alameda County Health Care Services Agency (ACHCSA/ACDEH). December 13, 1995. Closure Letter for the Investigation of the Chromium Vault, Former Chromex/Charles Lowe Facility, 1400 Park Avenue, Emeryville, California.
- Alameda County Department of Environmental Health (ACDEH). April 8, 2015. Fuel Leak Case RO0000398 and Geotracker Glocal ID T0600102202, 1400 Park Avenue, Emeryville, California.
- Alameda County Department of Environmental Health (ACDEH). April 4, 2016. Request for Data Gap Work Plan, Fuel Leak Case RO0000398 and Geotracker Glocal ID T0600102202, Chromex, 1400 Park Avenue, Emeryville, CA.
- Alton Geoscience. May 17, 1995. Supplementary Site Assessment Report, Former Chromex Facility, 1400 Park Avenue, Emeryville, California
- Aqua Science Engineers, Inc. March 21, 1997. Groundwater Monitoring Report Sampling at Emeryville Properties, 1400 Park Avenue, Emeryville, California.
- Aqua Science Engineers, Inc. January 12, 1996. Project Report – Underground Storage Tank Removal for Emeryville Properties, 1400 Park Avenue, Emeryville, California.
- Aqua Science Engineers, Inc. December 2, 1996. Workplan for Soil and Groundwater Assessment at 1400 Park Avenue, Emeryville, California.
- Aqua Science Engineers, Inc. January 28, 1997. Project Report – Half-Buried Tank Abandonment for Emeryville Properties, 1400 Park Avenue, Emeryville California.
- Aqua Science Engineers Inc. March 7, 1997. Report on Soil and Groundwater Assessment at Emeryville Properties, 1400 Park Avenue, Emeryville, California.
- Aqua Science Engineers, Inc. March 26, 1999. Letter to Mr. Jeremy Ross, Peet’s Coffee, 1400 Park Avenue, Emeryville, California.
- Department of Toxic Substance Control, July 2015. Advisory – Active Soil Gas Investigations.
- The Reynolds Group (TRG). January 31, 2007. Groundwater Well Redevelopment and Sampling Report – Request for Site Closure – 1400 Park Avenue, Emeryville, California.
- Terraphase Engineering. February 9, 2015. Workplan for Underground Storage Tank Closure - Former Charles Lowe Facility, 1400 Park Avenue, Emeryville, California.
- U.S. Geological Survey (USGS). Professional Paper 943, Helley, E.S., Laijoie, K.R., Spangle, W.E., and Blair, M.L. 1979. Flatland Deposits of the San Francisco Bay Region, California:
- USGS. 1957. Aerial and Engineering Geology of the Oakland west quadrangle, CA. By Radbruch, D.H. Miscellaneous Geologic Investigations Map I-239. USGS National Geologic Map Database Website. http://ngmdb.usgs.gov/ngm-bin/pdp/zui_pdpViewer.pl?id=19733. January 23.

FIGURES



TABLES

Table 1 - Soil Samples Collected in Vicinity of Former USTs
1400 Park Avenue, Emeryville, CA

Sample Name	Sample Date	Sample Depth (feet bgs)	Sample Location Description	TPH Gasoline (mg/kg)	TPH Diesel (mg/kg)	TPH Motor Oil (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
Removed Soil Samples from Bottom of UST Excavation, Before Overexcavation										
North, 9'	10/23/1995	9	North end, bottom of excavation, below gas UST	140	4,800	14,000	<0.005	0.55	0.81	7.4
Middle, 9'	10/23/1995	9	Middle, bottom of excavation below gas UST	1,300	2,600	8,000	0.41	6.1	13	110
South, 9'	10/23/1995	9	Southern end, bottom of excavation below diesel/motor oil UST	1,100	2,100	5,800	0.22	5.6	5	33
Soil Samples Remaining In Place, After Overexcavation										
North, 12'	10/23/1995	12	Northern end, bottom of excavation, after overexcavation	<1.0	<1.0	<5.0	<0.005	<0.005	<0.005	<0.005
South, 12'	10/23/1995	12	Southern end, bottom of excavation after overexcavation	<1.0	<1.0	<5.0	<0.005	<0.005	<0.005	0.027
HA1-4'	6/17/15	4	Northwest edge of former UST Excavation	<0.390	53	350	<1.8	<1.8	<1.8	<3.6
HA1-7'	6/17/15	7		<0.380	<5.0	36	<1.9	<1.9	<1.9	<3.9
HA1-9.5'	6/17/15	9.5		2.0	1,500	4,300	<1.7	<1.7	<1.7	<3.3
HA2	6/17/15	refusal due to rock or concrete debris at 1.5'	Western edge of former UST between HA1 and HA3	<i>Unable to collect sample</i>						
HA3-3'	6/17/15	3	Southwest edge of former UST Excavation	<0.320	<10	35	<1.6	<1.6	<1.6	<3.2
HA3-6'	6/17/15	6		<0.290	14	56	<1.5	<1.5	<1.5	<3.0
HA3-10'	6/17/15	10		190	1400	4,200	<1.5	<1.5	<1.5	<3.1

Table 2 - Groundwater Sample Results

Sample Name / Monitoring Well ID	Location Description	Sample Date	EPA Method 8015M			EPA Method 8240/8260B				
			TPH Gasoline (ug/L)	TPH Diesel (mg/L)	TPH Motor Oil (mg/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)
HA1-Grab-GW	Northwest edge of former UST Excavation	6/17/15	130	0.67	2.0	<0.50	<0.50	<0.50	<1.0	<0.50
MW-1	30 feet WestSouthwest of former USTs location	11/6/1995	--	<0.05	<0.25	<2	4	<2	7.8	--
		12/13/1996	<50	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5	<5
		3/21/1997	<50	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<5
		1/15/2007	<50	<0.1	--	<1	<5	<5	<5	<1
MW-2	110 feet Southwest of former USTs location	12/13/1996	--	--	--	<2	<2	<2	<2	--
		1/15/2007	<50	<0.1	--	<1	<5	<5	<5	<1
MW-3	90 feet EastSoutheast of former USTs location	12/13/1996	--	--	--	<2	<2	<2	<2	--
		1/15/2007	D	D	D	D	D	D	D	D
MW-4	270 feet SouthSouthwest of former USTs location	12/13/1996	<50	0.14	<0.5	<2	<2	<2	<2	--
		1/15/2007	<50	<0.1	--	<1	<5	<5	<5	<1

D - monitoring well destroyed with ACDEH Approval during loading dock expansion

MTBE = Methyl Tert Butyl Ether

Appendix A

ACHCSA Closure Letter For Investigation of the Chromium Vault, Former Chromex/Charles Lowe Facility–December 1995

**ALAMEDA COUNTY
HEALTH CARE SERVICES**

AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH

1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6777

December 13, 1995

William Lewerenz
Emeryville Properties,
699 Second Street
San Francisco, CA 94107

**Subject: Closure Letter for Investigation of the Chromium
Vault, Former Chromex/Charles Lowe Facility, 1400 Park
Avenue, Emeryville Ca 94608**

Dear Mr. Lewerenz:

This office has received the "Supplemental Site Assessment Report" dated May 17, 1995, and submitted by Alton Geoscience, the consultant of record for remediation actions regarding the former chromium vault. Thank you for submission of the document.

Review of the report indicates that low levels of chromium in the "dissolved phase" remain at the site. However, the low levels of chromium remaining in the groundwater do not appear to pose a threat to the public health and the environment. Therefore, with regards to the investigation of the former chromium vault located at the site, this office, with the concurrence of the Regional Water Quality Control Board, finds that "No Further Work" will be required at this time.

In light of these levels, and the potential for on-site migration from other sources, monitoring wells should not be destroyed or otherwise removed from the site. By allowing the wells to remain, you will be able to insure that any on-site migration from an off-site source that may be encountered in the future, is not the responsibility of activities that have taken place on site.

This office commends the work undertaken regarding the investigation. If you have any questions regarding this document, please contact this office. The number is (510) 567-6737.

page 2 of 2

Prior to the closure of the site regarding the former chromium vault, it will be necessary for you to remit the sum of \$3000.00 dollars. This sum represents the amount owed in the deposit/refund account set up for oversight activities. Upon receipt of this amount, the site will be removed from the "active list" of oversight cases.

Sincerely,



Brian P. Oliva, REHS, REA
Senior Hazardous Materials Specialist

cc: Jun Makashima, Acting Director Alameda County Department of
Environmental Health,
Gordon Colman, Acting Chief, Alameda County Department of
Environmental Health,
Sum Arigala, Regional Water Quality Control Board
Ariu Levi, Manager, North Area, Alameda County
Mike Benjamin, Thomas Short Co., 1685 34th St.,
Oakland, CA 94608

SA

APPENDIX B

*Modification to Workplan for Additional Soil
Vapor Sampling Required for Underground
Storage Tank Closure,
1400 Park Avenue, Emeryville, CA
September 16, 2016*

September 26, 2016

Mr. Mark Detterman - Senior Hazardous Materials Specialist, PE, CEG
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: *Modification to Workplan for Additional Soil and Soil Vapor Sampling Required for Underground Storage Tank Closure, Former Charles Lowe Facility, 1400 Park Avenue, Emeryville, CA*

Dear Mr. Detterman,

As discussed in our meeting on September 20, 2016 (meeting), Dudek would like to modify our May 2016 Workplan for Additional Soil and Soil Vapor Sampling Required for Underground Storage Tank (UST) Closure at the Former Charles Lowe Facility located at 1400 Park Avenue in Emeryville, California (Site). The requested modifications are designed to:

1. Present the results of previous testing of soils from beneath the USTs for naphthalene, thus satisfying the requirement for analysis of soils for this chemical of concern;
2. Provide documentation of DTSC approval of the use of a GEM 2000 for testing methane, oxygen and carbon dioxide, thus allowing for the use of this testing methodology;
3. Address the comments submitted by Alameda County Department of Environmental Health (ACDEH) in their letter dated June 30, 2016 by changing the depth of soil vapor samples and through the suggested use helium as a real time leak check compound
4. Change the number and locations of soil vapor samples collected and analyzed for methane, oxygen and carbon dioxide, as discussed in our meeting.

Previous Naphthalene Soil Sample Data

On November 13, 1995, following the removal of the two gasoline USTs and one diesel/motor oil UST at the Site, a soil sample was collected from the stockpile of impacted soils and labelled STKP-11/13 (Aqua Science Engineers, January, 1996). This grab sample of the hydrocarbon impacted soils was analyzed for SVOCs via EPA Method 8270, the results of which are included in this letter as **Attachment A**. The laboratory analytical results show a detection of naphthalene in soil at 2.0 mg/kg. This concentration is below the United States EPA Region 9 Screening Levels (RSLs) for both residential (3.8 mg/kg) and commercial (17 mg/kg) land use. No DTSC HERO Note 3 values exist for naphthalene in soil. Since the sample analyzed for naphthalene represented the worst hydrocarbon impacted soils excavated from below the USTs, the concentrations of naphthalene remaining in Site soils do not present a significant threat to human health, and require no additional sampling to allow for Low Threat Closure of the USTs and the Site.

DTSC Acceptance of Use of Hand Held Instruments for Monitoring Methane in Soil Vapor

As stated in the 2012 DTSC Advisory – Active Soil Gas Investigations:

“Methane may also be measured with a hand held gas emissions monitor or analyzer....”

- *Fixed and biogenic gases such as oxygen, carbon dioxide, methane and ethylene should be analyzed to determine whether methanogenesis is occurring. The RL for oxygen and carbon dioxide should be one percent or less....*

Hand-held instruments should be calibrated in accordance with the manufacturer’s specifications. At least 10 percent of all positive detections with concentrations of more than 5,000 parts per million by volume (ppmV) should be confirmed by another hand-held instrument (either different unit or a different brand)....”

Accordingly, soil vapor samples will be collected from the installed temporary vapor probes and analyzed for methane, carbon dioxide and oxygen using a GEM 5000 meter. This meter’s accuracy falls within the DTSC specified limits, with the following accuracy:

- Methane +/- 0.3% to 0.5% at concentrations less than 70-15%
- Oxygen +/- 1% at concentrations less than 25%
- Carbon Dioxide +/- 0.3% to 0.5% at concentrations less than 60%.

These reporting limits and accuracy are documented in the Gem 5000 manufacturer’s fact sheet included as **Attachment B**. Two GEM 5000 will be brought to the Site, to allow for confirmation measurements, if needed. Each of the hand-held meters will be calibrated using manufacturer’s specification before their use in the field. As specified in the DTSC guidance document, if concentrations of methane in excess of 5,000 ppmV or 0.5% are detected, a second hand-held instrument will be used to confirm the detection.

Revised Workplan

With your approval Dudek will sample soil vapor from temporary vapor probes advanced to 6.5 feet below ground surface (ft bgs) in 3 locations surrounding the former USTs (see **Figure 1** – sample points SV1, SV2 and SV3). Following a 3 volume purge, soil vapor samples will be collected from the vapor probes and measured for methane, carbon dioxide and oxygen levels using a GEM 5000 meter. 3 soil vapor samples will also be collected in thermal desorption tubes for analysis for naphthalene using EPA Method TO-17 and shipped under chain of custody documentation to ALS Laboratories. At the time of collection of these soil vapor samples, a helium tracer will be used as a leak detection compound.

If elevated levels of methane are measured in these three soil vapor points, two additional vapor probes (DSVA and DSVB) will be installed and sampled at 2 locations far from the USTs to look for potential vapor impacts related to other known and unknown releases from neighboring properties. If you have any questions regarding this Workplan, please contact the author at (949) 378-8448.



Respectfully submitted,

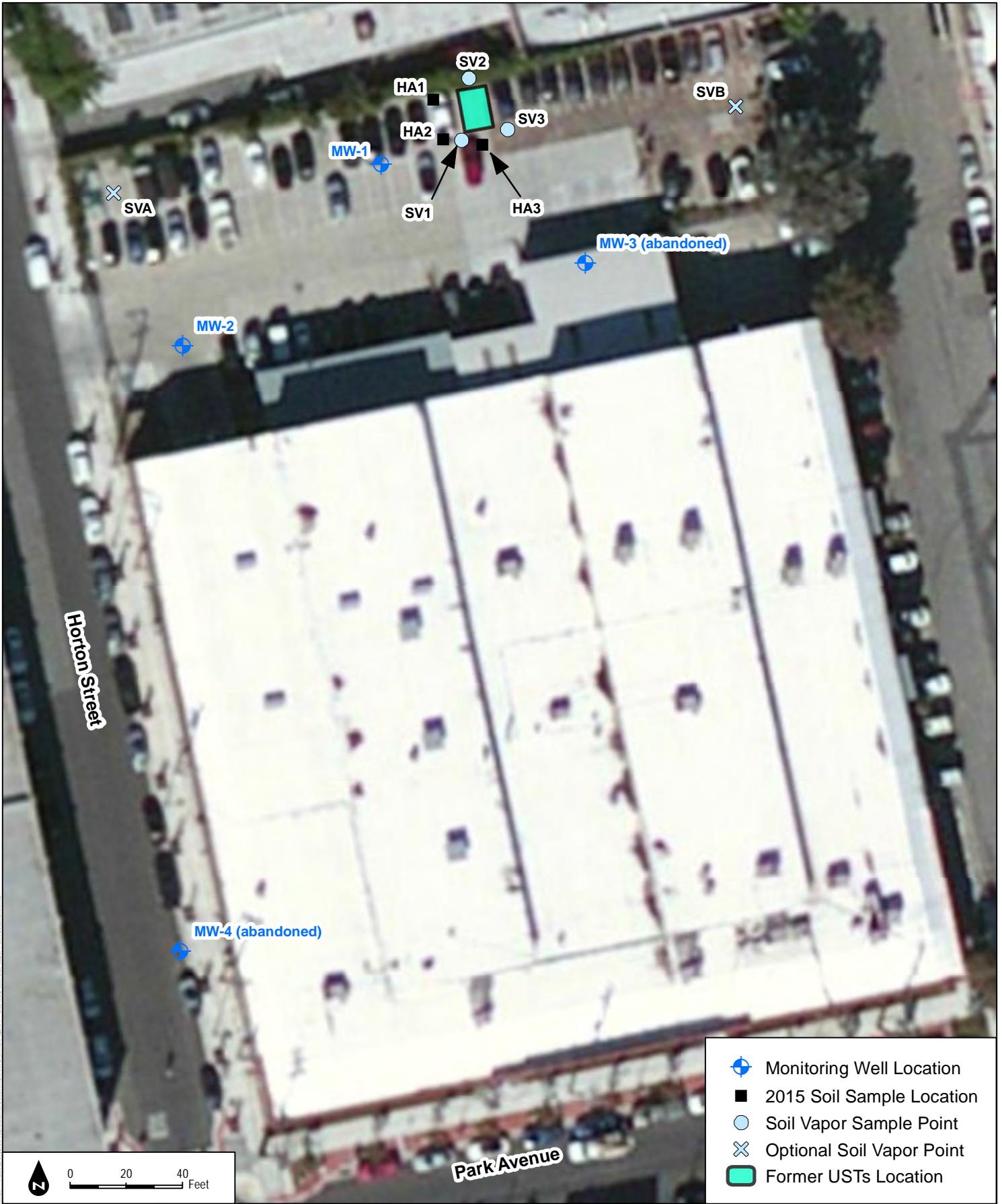
Gwen Tellegen, PE
Principal Engineer






Attachments:

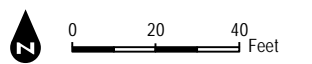
Figure 1 – Soil Vapor Sample Locations

Attachment A – Previous Laboratory Data for Naphthalene in Soil at USTs

Attachment B – Excerpts of DTSC Active Soil Gas Advisory Document Describing Allowable Methane Measurement Methods



-  Monitoring Well Location
-  2015 Soil Sample Location
-  Soil Vapor Sample Point
-  Optional Soil Vapor Point
-  Former USTs Location



DUDEK

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

1400 Park Avenue, Emeryville, California

FIGURE 1
Site Map with Soil Vapor Point Locations

May 2016

ATTACHMENT A
LABORATORY ANALYTICAL DATA FOR NAPHTHALENE IN SOIL AT USTS

CHROMALAB, INC.

Environmental Services (SDB)

November 17, 1995

Submission #: 9511222

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: A.S./E.P.
Received: November 14, 1995

Project#: 5271

re: One sample for Semivolatile Organics (BNAs) analysis.
Method: EPA 3550/8270

SampleID: STKP-11/13

Sample #: 110472

Matrix: SOIL

Extracted: November 14, 1995

Sampled: November 13, 1995

Run: 9371-A

Analyzed: November 16, 1995

Analyte	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE RESULT (%)
PHENOL	N.D.	1.0	N.D.	--
BIS (2-CHLOROETHYL) ETHER	N.D.	1.0	N.D.	--
2-CHLOROPHENOL	N.D.	1.0	N.D.	74
1,3-DICHLOROBENZENE	N.D.	1.0	N.D.	--
1,4-DICHLOROBENZENE	N.D.	1.0	N.D.	--
BENZYL ALCOHOL	N.D.	2.0	N.D.	--
1,2-DICHLOROBENZENE	N.D.	1.0	N.D.	--
o-METHYLPHENOL	N.D.	1.0	N.D.	--
BIS (2-CHLOROISOPROPYL) ETHER	N.D.	1.0	N.D.	--
m+p-METHYLPHENOL	N.D.	2.0	N.D.	--
N-NITROSO-DI-N-PROPYLAMINE	N.D.	1.0	N.D.	64
HEXACHLOROETHANE	N.D.	1.0	N.D.	--
NITROBENZENE	N.D.	1.0	N.D.	--
ISOPHORONE	N.D.	1.0	N.D.	--
2-NITROPHENOL	N.D.	1.0	N.D.	--
2,4-DIMETHYLPHENOL	N.D.	1.0	N.D.	--
BIS (2-CHLOROETHOXY) METHANE	N.D.	1.0	N.D.	--
2,4-DICHLOROPHENOL	N.D.	1.0	N.D.	--
1,2,4-TRICHLOROBENZENE	N.D.	1.0	N.D.	62
NAPHTHALENE	2.0	1.0	N.D.	--
4-CHLOROANILINE	N.D.	2.0	N.D.	--
HEXACHLOROBUTADIENE	N.D.	1.0	N.D.	--
4-CHLORO-3-METHYLPHENOL	N.D.	2.0	N.D.	89
2-METHYLNAPHTHALENE	3.2	1.0	N.D.	--
HEXACHLOROCYCLOPENTADIENE	N.D.	1.0	N.D.	--
2,4,6-TRICHLOROPHENOL	N.D.	1.0	N.D.	--
2,4,5-TRICHLOROPHENOL	N.D.	1.0	N.D.	--
2-CHLORONAPHTHALENE	N.D.	5.0	N.D.	--
2-NITROANILINE	N.D.	1.0	N.D.	--
DIMETHYL PHTHALATE	N.D.	5.0	N.D.	--
ACENAPHTHYLENE	N.D.	1.0	N.D.	--
3-NITROANILINE	N.D.	5.0	N.D.	--
ACENAPHTHENE	N.D.	1.0	N.D.	71
2,4-DINITROPHENOL	N.D.	5.0	N.D.	--
4-NITROPHENOL	N.D.	5.0	N.D.	--
DIBENZOFURAN	N.D.	1.0	N.D.	--
2,4-DINITROTOLUENE	N.D.	1.0	N.D.	--
2,6-DINITROTOLUENE	N.D.	2.0	N.D.	--
DIETHYL PHTHALATE	N.D.	5.0	N.D.	--

1220 Quarry Lane • Pleasanton, California 94566-4756

(510) 484-1919 • Facsimile (510) 484-1096

Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

November 17, 1995

Submission #: 9511222

page 2

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: A.S./E.P.

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Received: November 14, 1995

re: One sample for Semivolatile Organics (BNAs) analysis, continued.
Method: EPA 3550/8270

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Run: 9371-A


Analyzed: November 16, 1995

Analyte	RESULT	REPORTING	BLANK	BLANK SPIKE
	(mg/Kg)	LIMIT	RESULT	RESULT
	(mg/Kg)	(mg/Kg)	(mg/Kg)	(%)
4-CHLOROPHENYL PHENYL ETHER	N.D.	1.0	N.D.	--
FLUORENE	N.D.	1.0	N.D.	--
4-NITROANILINE	N.D.	5.0	N.D.	--
4,6-DINITRO-2-METHYLPHENOL	N.D.	5.0	N.D.	--
N-NITROSO-DI-N-PHENYLAMINE	N.D.	1.0	N.D.	--
4-BROMOPHENYL PHENYL ETHER	N.D.	1.0	N.D.	--
HEXACHLOROBENZENE	N.D.	1.0	N.D.	--
PENTACHLOROPHENOL	N.D.	5.0	N.D.	68
PHENATHRENE	N.D.	1.0	N.D.	--
ANTHRACENE	N.D.	1.0	N.D.	--
DI-N-BUTYL PHTHALATE	N.D.	5.0	N.D.	--
FLUORANTHENE	N.D.	1.0	N.D.	--
PYRENE	N.D.	1.0	N.D.	55
BUTYL BENZYL PHTHALATE	N.D.	5.0	N.D.	--
3,3'-DICHLOROBENZIDINE	N.D.	2.0	N.D.	--
BENZO (A) ANTHRACENE	N.D.	1.0	N.D.	--
BIS (2-ETHYLHEXYL) PHTHALATE	6.6	5.0	N.D.	--
CHRYSENE	N.D.	1.0	N.D.	--
DI-N-OCTYL PHTHALATE	N.D.	5.0	N.D.	--
BENZO (B) FLUORANTHENE	N.D.	1.0	N.D.	--
BENZO (K) FLUORANTHENE	N.D.	2.0	N.D.	--
BENZO (A) PYRENE	N.D.	0.5	N.D.	--
INDENO (1,2,3 C,D) PYRENE	N.D.	2.0	N.D.	--
DIBENZ (A,H) ANTHRACENE	N.D.	2.0	N.D.	--
BENZ (G,H,I) PERYLENE	N.D.	2.0	N.D.	--

For above analyte:

REPORTING LIMITS RAISED BY 10X DUE TO MATRIX INTERFERENCE


Alex Tam
Chemist


Eric Tam
Laboratory Director

1220 Quarry Lane • Pleasanton, California 94566-4756

(510) 484-1919 • Facsimile (510) 484-1096

Federal ID #68-0140157

Aqua Science Engineers, Inc. 2411 Old Crow Canyon Rd., # 4 San Ramon, CA 94583	Client Project ID: # 2908; Emeryville Properties	Date Sampled: 11/13/95
	Client Contact: David Allen	Date Received: 11/14/95
	Client P.O:	Date Extracted: 11/17/95
		Date Analyzed: 11/17-11/19/95

Volatile Organics By GC/MS

EPA method 624 or 8240

Lab ID		58676					
Client ID		STKP-11/13					
Matrix		S					
Compound	Concentration*	Reporting Limit		Compound	Concentration*	Reporting Limit	
		W	S			W	S
Acetone ^(b)	ND< 100	0.5	5	cis-1,3-Dichloropropene	ND< 100	0.5	5
Benzene	ND< 100	0.5	5	trans-1,3-Dichloropropene	ND< 100	0.5	5
Bromodichloromethane	ND< 100	0.5	5	Ethylbenzene	340	0.5	5
Bromoform	ND< 100	0.5	5	Methyl butyl ketone ^(d)	ND< 100	0.5	5
Bromomethane	ND< 100	0.5	5	Methylene Chloride ^(e)	ND< 100	0.5	5
Carbon Disulfide	ND< 100	0.5	5	Methyl ethyl ketone ^(f)	ND< 100	0.5	5
Carbon Tetrachloride	ND< 100	0.5	5	Methyl isobutyl ketone ^(g)	ND< 100	0.5	5
Chlorobenzene	ND< 100	0.5	5	Styrene ^(k)	ND< 100	0.5	5
Chloroethane	ND< 100	0.5	5	1,1,2,2-Tetrachloroethane	ND< 100	0.5	5
2-Chloroethyl Vinyl Ether ^(c)	ND< 100	0.5	5	Tetrachloroethene	ND< 100	0.5	5
Chloroform	ND< 100	0.5	5	Toluene ^(l)	ND< 100	0.5	5
Chloromethane	ND< 100	0.5	5	1,1,1-Trichloroethane	ND< 100	0.5	5
Dibromochloromethane	ND< 100	0.5	5	1,1,2-Trichloroethane	ND< 100	0.5	5
1,2-Dichlorobenzene	ND< 100	0.5	5	Trichloroethene	ND< 100	0.5	5
1,3-Dichlorobenzene	ND< 100	0.5	5	Trichlorofluoromethane	ND< 100	0.5	5
1,4-Dichlorobenzene	ND< 100	0.5	5	Vinyl Acetate ^(m)	ND< 100	0.5	5
1,1-Dichloroethane	ND< 100	0.5	5	Vinyl Chloride ⁽ⁿ⁾	ND< 100	0.5	5
1,2-Dichloroethane	ND< 100	0.5	5	Xylenes, total ^(o)	5200	0.5	5
1,1-Dichloroethene	ND< 100	0.5	5	Surrogate Recoveries (%)			
cis-1,2-Dichloroethene	ND< 100	0.5	5	Dibromofluoromethane	112		
trans-1,2-Dichloroethene	ND< 100	0.5	5	Toluene-d8	98		
1,2-Dichloropropane	ND< 100	0.5	5	4-Bromofluorobenzene	108		

Comments: j

* water and vapor samples are reported in ug/L, soil samples in ug/kg and all TCLP extracts in ug/L

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) 2-propanone or dimethyl ketone; (c) (2-chloroethoxy) ethene; (d) 2-hexanone; (e) dichloromethane; (f) 2-butanone; (g) 4-methyl-2-pentanone or isopropylacetone; (h) lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~ 5 vol. % sediment; (j) sample diluted due to high organic content; (k) ethenylbenzene; (l) methylbenzene; (m) acetic acid ethenyl ester; (n) chloroethene; (o) dimethylbenzenes.

24994

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH 24 HOUR 48 HOUR 5 DAY
 ANALYSIS REQUEST: OTHER

McCAMPBELL ANALYTICAL
 110 2nd AVENUE, # D7
 PACHECO, CA 94553 FAX (510) 798-1622
 REPORT TO: Ed Hamilton BILL TO: MAZ
 COMPANY: McCampbell

TELE: ABOVE FAX #:
 PROJECT NUMBER: 5271 PROJECT NAME: A.S./E.P.
 PROJECT LOCATION: SAMPLER SIGNATURE:

SAMPLE ID	LOCATION	SAMPLING		# CONTAINERS	TYPE CONTAINERS	MATRIX					METHOD PRESERVED					
		DATE	TIME			WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO ₃	OTHER P/06			
STKP-11/13	Emerysville	11-13-95	14:05	1	VQA	X										X

RUSH

COMMENTS

BTEX & TPH as Gasoline (602/8020 & 8015)	
THP as Diesel (8015)	
Total Petroleum Oil & Grease (S520 E&F/S520 B&F)	
Total Petroleum Hydrocarbons (418J)	
EPA 601/8010	
EPA 602/8020	
EPA 608/8080	
EPA 608/8080 - PCBs Only	
EPA 624/8240/8260	
EPA 625/8270	X
CAM - 17 Metals	
EPA - Priority Pollutant Metals	
LEAD (7240/7421/2392/6010)	
ORGANIC LEAD	
RCI	

SUB # : 9511222 REP : GC
 CLIENT : MCGAM
 DUE : 11/17/95
 REF # : 24994

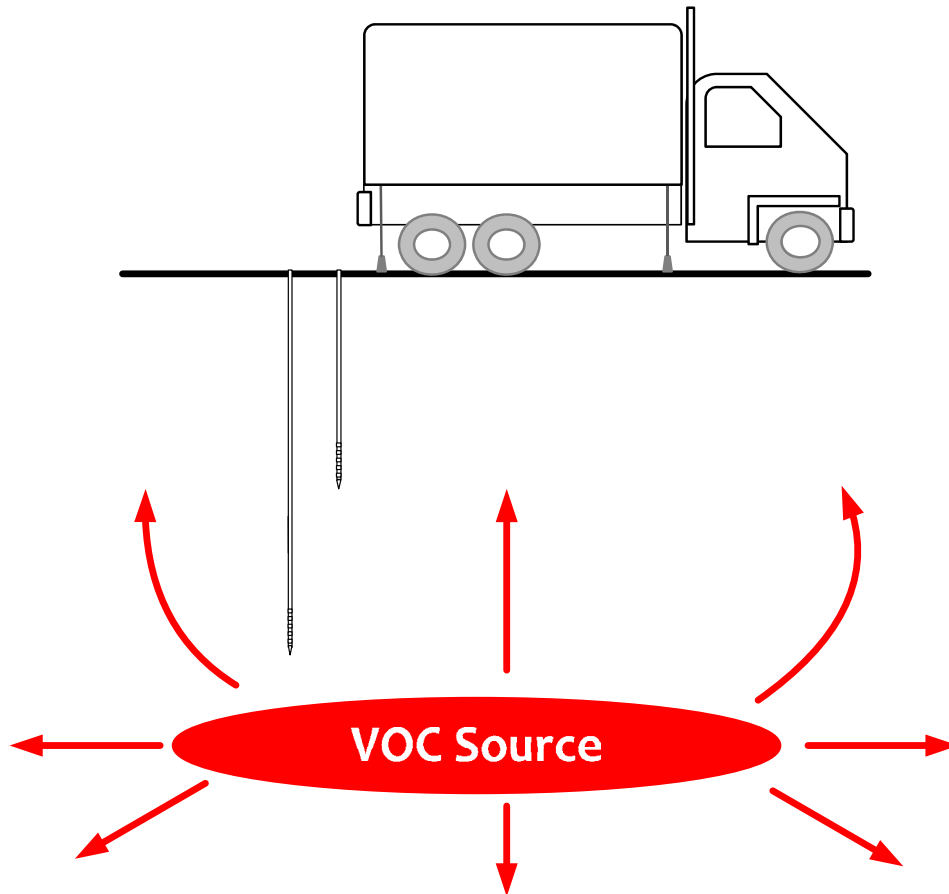
REINQUIRED BY: *Wendi Quea* DATE: 11/14/95
 RECEIVED BY: *[Signature]* TIME: 14:46
 RECEIVED BY: *[Signature]* TIME: 15:10
 RECEIVED BY LABORATORY: *Mimie Pak* DATE: 11/14/95 TIME: 15:10

REMARKS: 72 HR. TAT

ATTACHMENT B
DTSC ACCEPTED METHANE SAMPLING METHODS IN SOIL VAPOR FROM

Department of Toxic Substances Control, California Regional Water Quality Control Board Los Angeles/San Francisco Regions, Advisory – Active Soil Gas Investigations, April 2012.

**ADVISORY
ACTIVE SOIL GAS INVESTIGATIONS**



**California Environmental Protection Agency
Department of Toxic Substances Control
Los Angeles Regional Water Quality Control Board
San Francisco Regional Water Quality Control Board**

April 2012

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ADVISORY – ACTIVE SOIL GAS INVESTIGATIONS

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7.0 METHANE AND HYDROGEN SULFIDE SAMPLING PROGRAMS

7.1 METHANE

There are several analytical methods appropriate for methane, including:

- USEPA Methods 8015B modified;
- TO-3, 3C;
- ASTM Method D1945; or
- ASTM Method D1946.

Methane may also be measured with a hand held gas emissions monitor or analyzer. The RLs for methane analysis should be determined by project-specific DQOs.

7.1.1 Methane Field Collection

The following procedures should be followed when collecting samples for methane analysis:

- Methane should be collected in gas-tight sample containers such as passivated stainless steel canisters or polymer gas sampling bags.
- Fixed and biogenic gases such as oxygen, carbon dioxide, methane and ethylene should be analyzed to determine whether methanogenesis is occurring. The RL for oxygen and carbon dioxide should be one percent or less.
- Prior to sampling, tubing or probe pressure should be recorded in the field logs and reported along with the methane concentration to determine if the area is pressurized.

7.1.2 Methane Laboratory Analysis

GC calibration curves for analytes such as methane should be recorded and reported. Hand-held instruments should be calibrated in accordance with the manufacturer's specifications. At least 10 percent of all positive detections with concentrations more than 5,000 parts per million by volume (ppmv) should be confirmed by another hand-held instrument (either different unit or a different brand) or by a GC method when a hand-held instrument is used.

7.2 HYDROGEN SULFIDE

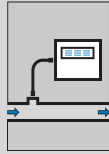
Hydrogen sulfide may be analyzed using:

- South Coast Air Quality Management District Method 307-91;
- ASTM D5504;
- USEPA Method 16;
- Draeger™ tubes; or
- Other equivalent methods.



GEM™5000

**PORTABLE GAS ANALYZER
INSTRUMENTATION**



The Next Generation of GEM™ Instrument

The GEM™5000 is designed specifically for use on landfills to monitor Landfill Gas (LFG) Collection & Control Systems. The GEM™5000 samples and analyzes the methane, carbon dioxide and oxygen content of landfill gas with options for additional analysis.

- **Six Times More Accurate and Twice as Fast**
- **NEW Annual** recommended factory service
- **Available with GPS and additional gas detection**



Details on back

➤ *Used For*

Landfill Gas Collection & Control Systems
Environmental Compliance
Landfill Gas to Energy
Subsurface Migration Probes

WWW.LANDTECNA.COM





GEM™5000

PORTABLE GAS ANALYZER INSTRUMENTATION



► Features

- ◆ Measures % CH₄, CO₂ and O₂ Volume, static pressure and differential pressure
- ◆ Calculates balance gas, flow (SCFM) and calorific value
- ◆ CO and H₂S (on Plus models only)
- ◆ High Accuracy and Fast Response Time
- ◆ Lighter and More Compact
- ◆ Certified intrinsically safe for landfill use
- ◆ Annual recommended factory service
- ◆ Calibrated to ISO/IEC 17025
- ◆ 3 year warranty with optional service plan

► Key Benefits

- ◆ Designed specifically for use on landfills to monitor landfill gas (LFG) extraction systems, flares, and migration control systems.
- ◆ No need to take more than one instrument to site
- ◆ Can be used for monitoring subsurface migration probes and for measuring gas composition, pressure and flow in gas extraction systems
- ◆ The user is able to set up comments and questions to record information at site and at each sample point
- ◆ Ensures consistent collection of data for better analysis
- ◆ Streamlined user experience reduces operational times

► Applications

- ◆ Landfill Gas Collection & Control Systems
- ◆ Environmental Compliance
- ◆ Landfill Gas to Energy
- ◆ Subsurface Migration Probes

► Technical Specification

Gas Ranges

Gases Measured	CH ₄	By dual wavelength infrared cell with reference channel		
	CO ₂	By dual wavelength infrared cell with reference channel		
	O ₂	By internal electrochemical cell		
	CO	By internal electrochemical cell		
	H ₂ S	By internal electrochemical cell		
Ranges	CH ₄	0-100% (vol)		
	CO ₂	0-100% (vol)		
	O ₂	0-25% (vol)		
	CO	0-2000ppm***		
	H ₂ S	0-500ppm***		
Gas Accuracy*	CH ₄	0-5% ± 0.3% (vol)	0-70% ± 0.5% (vol)	70-100% ± 1.5% FS
	CO ₂	0-5% ± 0.3% (vol)	0-60% ± 0.5% (vol)	60-100% ± 1.5% FS
	O ₂	0-25% ± 1.0% (vol)		
	CO(H ₂)**	0-2000ppm ± 1.0% FS		
	H ₂ S	0-500ppm ± 2.0% FS		

* Typical accuracy after calibration as recommended in the operations manual.
 **Hydrogen compensated Carbon Monoxide measurement.
 ***Additional ranges available, contact LANDTEC for more information

Other Parameters

	Unit	Resolution	Comments
Energy	BTU/hr	1000 BTU/hr	Calculated from specific parameters
Static Pressure	in. H ₂ O	0.1 in. H ₂ O	Direct Measurement
Differential Pressure	in. H ₂ O	0.001 in. H ₂ O	Direct Measurement

Important Note: The information in this document is correct at the time of generation. We do, however, reserve the right to change the specification without prior notice as a result of continuing development.

Pump

Flow	Typically 550cc/min
Flow with 80 in. H ₂ O vacuum	Approximately 80cc/min

Environmental Conditions

Operating Temperature Range	14°F – 122°F (-10°C - 50°C)
Operating Pressure	-100 in. H ₂ O, +100 in. H ₂ O (-250mbar, +250mbar)
Relative Humidity	0-95% non condensing
Barometric Pressure	± 14.7 in.Hg (±500mbar) from calibration pressure
Barometric Pressure Accuracy	± 1% typically

Power Supply

Battery Life	Typical use 8 hours from fully charged
Charge Time	Approximately 3 hours from complete discharge

Certification Rating

ATEX	II 2G Ex ib IIA T1 Gb (Ta= -10°C to +50°C)
ISO17025	ISO/IEC17025:2010 Accreditation #66916
CSA	Ex ib IIA T1 (Ta= -10°C to +50°C) (Canada), AEx ib IIA T1 (Ta= -10°C to +50°C) USA

► Associations



The Climate Registry



► Certifications



► Contacts

LANDTEC North America
 850 South Via Lata, Suite 112
 Colton, CA 92324
 Phone (800) LANDTEC - (909) 783-3636
 Western Sales Office
 (800) 821-0496 • Fax (909) 825-0591
 Eastern Sales Office
 (800) 390-7745 • Fax (301) 391-6546

LANDTEC South America
 +55 (11) 5181-6591 • Fax +55 (11) 5181-6585
 www.LANDTEC.com.br



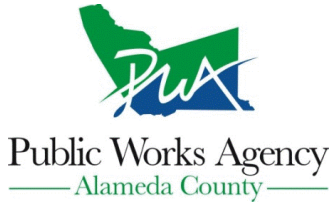
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Product designs and specifications are subject to change without notice.
 User is responsible for determining suitability of product.
 LANDTEC, GEM and LAPS are registered with the U.S. Patent and Trademark Office.

APPENDIX C

Alameda County Public Works Agency Boring Permit

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 10/24/2016 By jamesy

Permit Numbers: W2016-0764
Permits Valid from 10/28/2016 to 10/28/2016

Application Id: 1476212108793
Site Location: 1400 Park Ave
Project Start Date: 10/28/2016
Assigned Inspector: Contact Marcelino Vialpando at (510) 670-5760 or Marcelino@acpwa.org

City of Project Site: Emeryville

Completion Date: 10/28/2016

Applicant: Dudek - Gwen Tellegen
605 3rd Street, Encinitas, CA 92024
Property Owner: Emeryville Properties LLC
3963 Woodside Ct, Lafayette, CA 94549
Client: William Lewerenz
3963 Woodside Ct, Lafayette, CA 94549

Phone: 949-378-8448

Phone: 510-356-4192

Phone: 415-793-3311

	Total Due:	\$265.00
Receipt Number: WR2016-0525	Total Amount Paid:	\$265.00
Payer Name : Dudek	Paid By: CHECK	PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Vapor Sampling 24 to 48 hours only - 3 Boreholes
 Driller: TEG Northern California - Lic #: 706568 - Method: DP

Work Total: \$265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2016-0764	10/24/2016	01/26/2017	3	1.00 in.	6.50 ft

Specific Work Permit Conditions

1. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

2. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

3. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

4. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

Alameda County Public Works Agency - Water Resources Well Permit

5. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
6. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.
7. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
8. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.
9. NOTE:
Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.
10. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Temp Vapor wells shall not be converted to monitoring Vapor wells, without a separate permit application process.
11. Vapor monitoring wells constructed with tubing shall be decommissioned by complete removal of tubing, grout seal, and fill material of sand or bentonite. Fill material may be removed by hand auger if material can be removed completely.

Vapor monitoring wells constructed with pvc pipe less than 2" shall be overdrilled to total depth.

Vapor monitoring wells constructed with 2" pvc pipe or larger may be grouted by tremie pipe (any depth) or pressure grouted (less than 30', 25 psi for 5 min).

APPENDIX D

Laboratory Analytical Results



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

November 18, 2016

Gwen Tellegen, P.E.
Dudek & Associates, Incorporated
605 Third Street
Encinitas, CA 92024

RE: Emeryville Properties / 9029

Dear Gwen:

Enclosed are the results of the samples submitted to our laboratory on November 11, 2016. For your reference, these analyses have been assigned our service request number P1605277.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 11:34 am, Nov 18, 2016

Sue Anderson
Project Manager



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Dudek & Associates, Incorporated
Project: Emeryville Properties / 9029

Service Request No: P1605277

CASE NARRATIVE

The samples were received intact under chain of custody on November 11, 2016 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

The sample referenced as Trip Blank (P1605277-004) was a calibration tube; therefore, analysis was cancelled.

Volatile Organic Compound Analysis

The samples were analyzed for naphthalene in accordance with the methodology outlined in EPA Method TO-17. This procedure is described in laboratory SOP VOA-TO17. The analyses were performed by thermal desorption/gas chromatography/mass spectrometry. This analysis is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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 Simi Valley, CA 93065
 T: +1 805 526 7161
 F: +1 805 526 7270
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	977273
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-003
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413- 16-7
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA01627201 6-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Dudek & Associates, Incorporated
Project ID: Emeryville Properties / 9029

Service Request: P1605277

Date Received: 11/11/2016
Time Received: 09:55

TO-17 - VOC Sorbent

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	
SV-1	P1605277-001	Air	11/10/2016	10:47	X
SV-2	P1605277-002	Air	11/10/2016	11:05	X
SV-2A	P1605277-003	Air	11/10/2016	11:22	X



2655 Park Center Drive, Suite A
Simi Valley, California 93065

Phone: +1 805 526 7161 Fax: +1 805 526 7270

Company Name & Address (Reporting Information)
Dudek 3rd St.
605. 3rd St.
Encinitas CA 92024

Project Manager
Gwen Tellegen

Phone 949-378-8448 Fax

Email Address for Result Reporting
gtellegen@dudek.com

Client Sample ID
SV-1
SV-2
SV-2A
Trip Blank

Laboratory ID #
298313

Date Collected
11/10/16
11/10/16
11/10/16
11/10/16

Tube ID
SV-1
SV-2
SV-2A

Sampling Pump Flow (mL/min)
200

Sampling Start Time
10:46a
11:04a
11:21a

Sampling End Time
10:47a
11:05a
11:22a

Sample Volume
200cc
200cc
200cc

Analysis Method/Analytes
TO17
TO17
TO17
TO17

Comments
pulled 200cc through
" "
" "

Chain of Custody Record & Analytical Service Request

Requested Turnaround Time in Business Days (Surcharges) Please Circle:
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day (Standard)

ALS Project No. 21605227

Project Name Emeryville Properties

Project Number 9029

P.O. # / Billing Information

Sampler (Print & Sign) Ryan Dwyer

ALS Contact: Sue Anderson

Analysis Method/Analytes

Comments

Project Requirements (MRLs, QAPP)

Project Requirements (MRLs, QAPP)

Project Requirements (MRLs, QAPP)

Project Requirements (MRLs, QAPP)

Project Requirements (MRLs, QAPP)

Project Requirements (MRLs, QAPP)

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Project Requirements (MRLs, QAPP)

Project Requirements (MRLs, QAPP)

Project Requirements (MRLs, QAPP)

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Report Tier Levels - please select
Tier I - (Results/Default if not specified)
Tier II (Results + QC)
Tier III (Data Validation Package) 10% Surcharge
Tier IV (client specified)

Relinquished by: (Signature) Ryan Dwyer
Relinquished by: (Signature)
Relinquished by: (Signature)

Received by: (Signature) Sue Anderson
Received by: (Signature)
Received by: (Signature)

Date: 11/10/16
Date: 11/10/16
Date: 11/10/16

Time: 11:11:10
Time:
Time:

EDD required Yes / No
Type:

Cooler / Blank Temperature °C

**ALS Environmental
Sample Acceptance Check Form**

Client: Dudek & Associates, Incorporated Work order: P1605277
 Project: Emeryville Properties / 9029
 Sample(s) received on: 11/11/16 Date opened: 11/11/16 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- | | <u>Yes</u> | <u>No</u> | <u>N/A</u> |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Did sample containers arrive in good condition? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3 Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was proper temperature (thermal preservation) of cooler at receipt adhered to? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Cooler Temperature: 8° C Blank Temperature: ° C | | | |
| | | Wet Ice | |
| 8 Were custody seals on outside of cooler/Box/Container? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were signature and date included? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were seals intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 Do containers have appropriate preservation , according to method/SOP or Client specified information? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Is there a client indication that the submitted samples are pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials checked for presence/absence of air bubbles? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10 Tubes: Are the tubes capped and intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11 Badges: Are the badges properly capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1605277-001.01	Tube, TD					
P1605277-002.01	Tube, TD					
P1605277-003.01	Tube, TD					
P1605277-004.01	Tube, TD					*

Explain any discrepancies: (include lab sample ID numbers): _____
 Samples were shipped with wet ice, which had melted in transit. Out of acceptable temperature range.
 *Sample noted on COC as Trip Blank but is a calibration tube; therefore, cannot be run as a sample.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Dudek & Associates, Incorporated
Client Project ID: Emeryville Properties / 9029

ALS Project ID: P1605277

Naphthalene

Test Code: EPA TO-17
 Instrument ID: Markes ATD/Agilent 5975Cinert/7890A/MS20
 Analyst: Chris Parnell
 Sampling Media: TD Tenax Sorbent Tube(s)
 Test Notes:

Date(s) Collected: 11/10/16
 Date Received: 11/11/16
 Date Analyzed: 11/11/16

Client Sample ID	ALS Sample ID	Injection Volume Liter(s)	Canister Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
SV-1	P1605277-001	0.200	0.86	4.3	2.5	0.82	0.48	
SV-2	P1605277-002	0.200	0.67	3.3	2.5	0.64	0.48	
SV-2A	P1605277-003	0.200	< 0.50	ND	2.5	ND	0.48	
Method Blank	P161111-MB	NA	< 0.50	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

Client: Dudek & Associates, Incorporated
Client Project ID: Emeryville Properties / 9029

ALS Project ID: P1605277

Test Code: EPA TO-17
Instrument ID: Markes ATD/Agilent 5975Cinert/7890A/MS20
Analyst: Chris Parnell
Sampling Media: TD Tenax Sorbent Tube(s)
Test Notes:

Date(s) Collected: 11/10/16
Date(s) Received: 11/11/16
Date(s) Analyzed: 11/11/16

Client Sample ID	ALS Sample ID	Bromofluorobenzene		Data Qualifier
		% Recovered	Acceptance Limits	
Method Blank	P161111-MB	96	70-140	
Lab Control Sample	P161111-LCS	94	70-140	
Duplicate Lab Control Sample	P161111-DLCS	95	70-140	
SV-1	P1605277-001	96	70-140	
SV-2	P1605277-002	97	70-140	
SV-2A	P1605277-003	96	70-140	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: **Dudek & Associates, Incorporated**

Client Sample ID: **Duplicate Lab Control Sample**

Client Project ID: **Emeryville Properties / 9029**

ALS Project ID: P1605277

ALS Sample ID: P161111-DLCS

Test Code: EPA TO-17

Instrument ID: Markes ATD/Agilent 5975Cinert/7890A/MS20

Analyst: Chris Parnell

Sampling Media: TD Tenax Sorbent Tube

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 11/11/16

Volume(s) Analyzed: NA Liter(s)

CAS #	Compound	Spike Amount		Result		% Recovery		ALS		Data
		LCS / DLCS	LCS	DLCS	LCS	DLCS	Acceptance	RPD	RPD	
		ng	ng	ng	LCS	DLCS	Limits	Limit	Qualifier	
91-20-3	Naphthalene	10.1	9.60	9.54	95	94	70-130	1	25	