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11:25 am, Oct 31, 2008

Alameda County
Environmental Health

30 October 2008
Project No. 2543.04

Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Subject: Soil Vapor Sampling Work Plan
901 Jefferson Street
Oakland, California
SLIC Case RO0002924

Dear Mr. Wickham:

As a legally authorized representative of A.F. Evans Development, Inc., and on behalf of A.F. Evans Development, Inc, I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document *Soil Vapor Sampling Work Plan, 901 Jefferson Street, Oakland, California, SLIC Case RO0002924*, are true and correct to the best of my knowledge.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Rick Bell', written over a light-colored background.

Rick Bell
AFE Executive VP
A.F. Evans Development, Inc.

30 October 2008
Project 2820.04

Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Work Plan for Soil Vapor Investigation
901 Jefferson Street
Oakland, CA 94607
SLIC Case RO0002924

Dear Mr. Wickham:

On behalf of A.F. Evans, Treadwell & Rollo, Inc. (T&R) is submitting this work plan for a soil vapor investigation at 901 Jefferson Street in Oakland, California (Site) (see Figure 1). This work plan was prepared in response to Alameda County Environmental Health's (ACEH's) letter dated 26 August 2008, in which you request a work plan to evaluate the potential for vapor intrusion from residual fuel hydrocarbons reported in groundwater at the Site in 1996. In that letter, you also request information regarding fill imported to the Site, soil exported from the Site to another development, characterization of the Site soil, and documentation by others of previous environmental investigations. This work plan addresses your request for a soil vapor investigation. Your other technical comments and information requests in the 26 August 2008 letter are addressed under separate cover.

BACKGROUND

The Site was historically operated as a gasoline filling station, and underground fuel storage tanks were reportedly removed in 1953. Recent environmental activities have been ongoing at the Site since 1989, and have included Phase I Environmental Site Assessments, soil and groundwater investigations, and groundwater monitoring. The results of these investigations indicated the presence of petroleum hydrocarbons in soil and groundwater. In 1994, in-situ bioremediation was performed for remediation of groundwater at the Site. On 26 December 1996, ACEH issued a completion certificate stating that "no further action related to the underground tank release is required." The results from these historic activities are reported elsewhere.

Since 1997, several investigations have been performed to evaluate Site soil quality for the purpose of redeveloping the Site. Elevated concentrations of lead and petroleum hydrocarbons were found in soil during these investigations. Treadwell & Rollo prepared a *Site Mitigation Plan, Proposed Residential Development, 901 Jefferson Street, Oakland, California*, dated 12 April 2006, which described actions to be taken during construction to mitigate potential environmental risks to the Site workers, future Site users, and the environment. These activities included removing soil in the upper seven feet of soil containing lead or petroleum hydrocarbons (if encountered) that exceeded Environmental Screening Levels (ESLs) for residential land use (RWQCB, 2005). In addition, several over-excavations and confirmation sampling events were conducted at the Site during development. In March 2008, Treadwell & Rollo submitted the *Site Mitigation Completion Report, 901 Jefferson Street, Oakland, California*, dated 17 March 2008, which documented the completion of these activities. ACEH issued technical comments on this report on 18 April 2008, which Treadwell and Rollo responded to on 5 June 2008. This document responds to the request for a soil vapor investigation work plan in ACEH's subsequent technical comments issued on 26 August 2008.

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INVESTIGATION SCOPE

The objective of this investigation is to evaluate the potential for vapor intrusion of benzene and other residual petroleum hydrocarbon compounds into the northeastern portion of the overlying building in the vicinity of former groundwater monitoring well MW-5 (Figure 2). In March 1996, benzene and total petroleum hydrocarbons quantified as gasoline (TPH-g) were detected in well MW-5 at concentrations of 1,300 and 16,000 micrograms per liter ($\mu\text{g/L}$), respectively. The benzene concentration from this well during this sampling event exceeds the ESL for groundwater as a concern for intrusion into indoor air (540 $\mu\text{g/L}$) (RWQCB, 2008). In technical comment number 1 of ACEH's 26 August 2008 letter, ACEH requested the collection of soil vapor samples "to confirm that the potential risk from vapor intrusion of volatile organic compounds to indoor air is minimal".

Currently, engineering controls are in place at the building that will mitigate the potential for vapor intrusion. These controls include a moisture barrier that would be breached by installing vapor sampling points inside the building. As a result, we propose to collect soil vapor samples at five locations along the northeast perimeter of the building (Figure 3), in the area nearest well MW-5, without boring through the building slab and moisture barrier. During construction, soil was overexcavated to a depth of approximately seven feet below the ground surface (bgs). Soil that exceeded the ESL for lead was disposed appropriately off Site, other soil was either exported as backfill to another redevelopment site or replaced and compacted in the Site excavation. Additional soil was imported to the Site to make construction grade. Consequently, all proposed soil vapor samples will be collected at a depth of approximately 9-feet below ground surface (bgs), so that the vapor samples will be collected approximately two feet below the depth of the construction excavation and backfilling.

Activities to be conducted prior to the beginning of sampling will include:

- Sampling locations will be cleared for underground utilities by contacting Underground Services Alert and using a private locator
- Drilling permits will be acquired from the Alameda County Department of Public Works
- Encroachment permits will be obtained from the Oakland Public Works Department prior to work in the City's right-of-way.

Soil vapor samples will be collected following the sampling protocol outlined in the Department of Toxic Substances Control (DTSC)/Los Angeles Regional Water Quality Control Board (LARWQCB) guidance titled "*Advisory – Active Soil Gas Investigations*," dated 28 January 2003.

Soil vapor samples will be collected using a standard-size pickup truck equipped with a direct-push drill rig. Soil vapor samples will be collected by driving a 1-inch-diameter soil vapor sampling probe to the specified sample depth using a hydraulic hammer. Once advanced to the sample depth, the probe will be raised approximately 6 inches to expose an area from which to collect the soil vapor. Polyethylene tubing will be threaded through the drive rod and connected to the soil vapor intake port at the end of the probe. Hydrated bentonite chips will be used to create a seal around the drive rod to prevent ambient air intrusion into the soil vapor sample. A 50-cubic-centimeter (cc) syringe and three-way valve attached to the end of the tubing will act as the vacuum source. Using the 50-cc syringe, we will purge the tubing of a known, depth specific purge volume prior to collecting the sample. The sample will be collected over a 15-second interval. Each sample location will require a separate sample probe installation.

Mr. Jerry Wickham
Alameda County Environmental Health
30 October 2008
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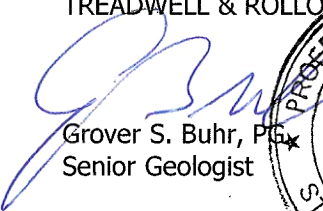
The syringe will be labeled and the sample analyzed for VOCs and TPHg by EPA Method 8260b on Site by a mobile laboratory. Additionally, for quality assurance/quality control (QA/QC), duplicate soil vapor samples will be collected from two locations using 1-liter summa canisters and sent to an independent, off-site laboratory for analysis.

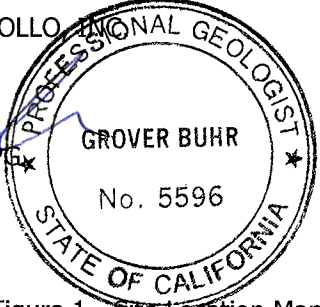
Following the sample collection, the probes will be removed from the ground. After the final sample is collected, the holes will be sealed with neat cement and the sidewalk will be restored.


T&R will prepare a letter report which will present the results of the soil vapor sampling for ACEH review. Analytical results will be compared to the appropriate ESLs. The report will discuss the Site data and conclusions, and recommendations for further action, if necessary

We are prepared to start the soil vapor sampling immediately, pending driller, mobile laboratory, and permitting approval. The Site work should be completed in approximately one day and the investigation report within four weeks of completing the field work. Please respond with your approval of this work plan or if you have questions or comments, please contact Grover Buhr at (510) 874-4500, ext. 529.

Sincerely yours,
TREADWELL & ROLLO


Grover S. Buhr, PG
Senior Geologist

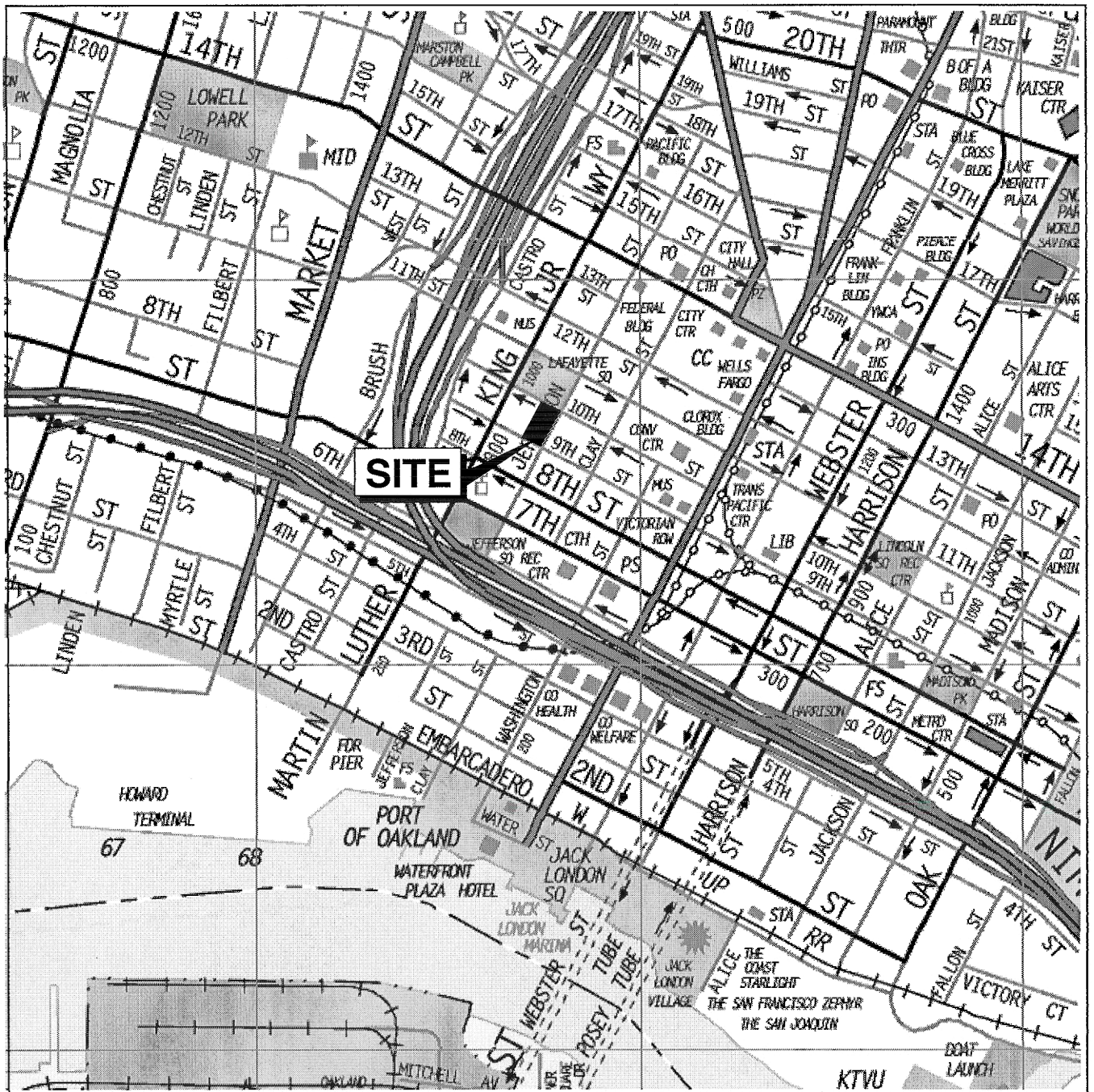



Patrick B. Hubbard, PG, CEG
Principal Geologist

28200407.OAK

Attachments: Figure 1 - Site Location Map
Figure 2 - Soil Vapor Sample Locations

cc: Mr. Anye Spivey, AF Evans



Base map: The Thomas Guide
Alameda County
1999



No scale

901 JEFFERSON STREET
Oakland, California

SITE LOCATION MAP

Treadwell & Rolo

Date 10/29/08

Project No. 2820.04

Figure 1

9TH STREET

10TH STREET

Single Story
Concrete Masonry Unit
Building (no basement)

MW-5

Date	TPH-g, $\mu\text{g/L}$	Benzene, $\mu\text{g/L}$
5 Mar. 1996	16,000	1,300

Parking Garage

Garage
Entrance

Commercial

Lofts

Commercial

SG-1

SG-2

MW-5

SG-5

SG-4

SG-3

Sidewalk

JEFFERSON STREET

EXPLANATION

--- Site boundary

TPH-g = Total petroleum hydrocarbons as gasoline

$\mu\text{g/L}$ = Micrograms per liter



0 30 Feet
Approximate scale

901 JEFFERSON STREET
Oakland, California

SOIL VAPOR SAMPLING LOCATIONS

Date 10/29/08

Project No. 2820.04

Figure 2

Treadwell & Rollo