



June 1, 2006

Ms. Teresa Clarke  
Affordable Housing Associates  
1250 Addison Street, Suite G  
Berkeley, California 94702

RE: Draft Tier 1 Human Health Risk Evaluation  
160 14<sup>th</sup> Street, Oakland, California  
*ACC Project Number 6179-014-02*

Dear Ms. Clarke:

ACC Environmental Consultants (ACC) has prepared this letter summarizing its Tier 1 Human Health Risk Evaluation for 160 14<sup>th</sup> Street, Oakland, California (Site). In the May 5, 2006 Subsurface Characterization Report, ACC identified elevated concentrations of tetrachloroethene (PCE) in groundwater that likely originates on the adjacent property located at 190 14<sup>th</sup> Street.

**BACKGROUND**

In July 2001, ACC advanced three exploratory soil borings designated SB1 through SB3. ACC identified PCE concentrations of 6.1 micrograms per Liter ( $\mu\text{g/L}$ ) in soil boring SB1 and 2.6  $\mu\text{g/L}$  in soil boring SB3.

In April 2006, ACC advanced six exploratory soil borings designated B-1 through B-6. Three grab groundwater samples were analyzed for halogenated volatile organic compounds (HVOCs) and analytical results are summarized in Table 1. No detectable HVOCs were reported in three soil samples collected at depths of 14 to 15.5 feet below ground surface (bgs). Results of the April 2006 investigation were reported to the Oakland Fire Department.

**TABLE 1 - HVOC GROUNDWATER RESULTS**

Sample ID	PCE	TCE	Cis-DCE	Vinyl Chloride	Other HVOCs
B-1 Water	780	33	<2.0	<2.0	<RL
B-3 Water	68	5.3	16	8.7	<RL
B-5 Water	820	42	<5.0	<5.0	<RL

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## DISCUSSION

Due to the reported concentration increase in PCE in groundwater from July 2001 to April 2006, ACC performed a Tier 1 risk evaluation using environmental screening levels (ESLs) promulgated by the Regional Water Quality Control Board. Based on proposed future Site use, Site location, and the depth and media impacted by PCE, potential indoor inhalation is the only anticipated complete exposure pathway.

ACC compared the April 2006 PCE analytical results to its applicable ESL in both a residential and commercial/industrial setting as documented in the RWQCB guidance document *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater*, Interim Final - February 2005. The intent of comparing the average PCE concentration to published ESLs is to easily and cost-effectively compare the reported PCE concentration to those that would be considered unacceptable from a human health risk standpoint. Constituents of concern that exceed their respective ESLs do not necessarily indicate that remediation, institutional controls, or engineering controls are necessary, but that additional risk assessment may be necessary to fully evaluate potential human health risk.

According to Table E-1a, the PCE ESLs vary from 120 µg/L in high permeability residential soils to 1,700 µg/L in low/moderate permeability commercial soils. PCE ELS are summarized in Table 2.

**TABLE 2 – PCE ESLs (Table E-1a)**

Constituent	Residential Land Use		Commercial Land Use	
	High Perm. Soil	Low Perm. Soil	High Perm. Soil	Low Perm. Soil
PCE	120	500	420	1,700

Notes All concentrations are in micrograms per Liter (µg/L)

PCE concentrations ranged from 780 to 820 µg/L in groundwater in saturated silty sands below 10 feet bgs. Based on estimated soil permeability at the Site, the applicable residential ESL for PCE would be 400 µg/L and the applicable commercial ESL for PCE would be 1,360 µg/L. Site development will be a combination of commercial space and parking on the ground floor so commercial ESLs are applicable. Based on an average PCE concentration of 800 µg/L, the commercial ESL for PCE is not exceeded.

Site development includes the installation of a concrete foundation ranging in thickness between 6 to 24 inches and a Preprufe® 200 vapor barrier under the building foundation which will further decrease the potential human health risk associated with PCE volatilizing into soil gas and migrating vertically through soil into indoor air.

## SUMMARY

PCE originating from an offsite source has been identified in groundwater at the Site. Based on a commercial ESL of 1,360 µg/L for PCE (80 percent of the published low/moderate permeability commercial ESL of 1,700 µg/L), PCE in groundwater does not pose an unacceptable human health risk due to indoor inhalation. Proposed Site development further decreases the potential human health risk posed by potential volatilization of PCE in soil gas entering inhabited space by:

- Installation of concrete foundation ranging from 6 to 24 inches over the entire Site footprint;
- Installation of a Preprufe® 200 vapor barrier under the building foundation; and
- Installation of bentonite waterproofing under concrete foundation in the parking areas.

ACC understands that the vapor barrier (Preprufe® 200, Liquid Boot®, or equivalent) was proposed prior to identification of the PCE issue in groundwater. Moisture control measures, such as a vapor barriers or bentonite waterproofing, serve a dual purpose: 1) preventing/reducing moisture transmission; and 2) preventing/reducing of volatile constituents in soil gas. However, proposed foundation design and moisture control measures should not be construed as a “cap” and/or a mitigating measure to address the PCE issue.

In addition, based on an estimated acceptable human health risk with or without the mitigating effects of a vapor barriers or bentonite waterproofing, monitoring indoor air following Site development is not indicated.

If you have any questions, please contact me at (510) 638-8400, ext. 109.

Sincerely,



David DeMent, PG, REA II  
Environmental Division Manager