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Alameda County
Environmental Health

June 9, 2008

SOMA
ENVIRONMENTAL ENGINEERING, INC.
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Mr. Paresh Katri
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Re: Fuel Leak Case **No. RO0000473,** ARCO, 15101 Freedom Avenue
San Leandro, California

Dear Paresh:

Thank you for your letter dated April 25, 2008 in connection with SOMA Environmental Engineering, Inc. (SOMA) report entitled "Additional Soil and Groundwater Investigation for Remedial Investigation and Feasibility Study" report dated March 14, 2008 (the Report). This letter has been prepared to address your comments in connection with the Report. Our responses to your comments are numbered in the same order as they appear in your letter.

1. **Soil Vapor Study** – You questioned the validity of the soil gas survey, and indicated that because isopropyl alcohol and atmospheric gases (i.e., oxygen, carbon dioxide, and methane) are not part of analytical suite, results may not be representative of the subsurface condition.

   Based on the absence of a leak test compound in the soil gas samples collected, SOMA believes that concentrations detected during the soil gas survey are reliable and thus representative of subsurface conditions. Isopropyl alcohol, the leak check compound also known as 2-propanol, was used for quality control purposes during soil gas survey. According to "Active Soil Gas Investigations Advisory" published by Department of Toxic Substances Control, tracer compounds like isopropanol (2-propanol) maybe used ". . . if a detection limit of 10 µg/L or less can be achieved." Isopropyl alcohol was requested in the chain of custody (COC) to be part of the analytical suite with a detection limit less than 10 µg/L (please see COC included in Appendix F). Table 3 of the Report showed an absence of 2-propanol or isopropyl alcohol in the soil gas samples. This clearly indicates that during soil gas sampling, no atmospheric air leaked into the sample port and results are representative of the subsurface condition.

   Using the atmospheric gases for quality control was not included in the approved workplan. The workplan merely stated that the soil gas samples will be analyzed by EPA Method TO-15, which requires using isopropyl alcohol as part of quality control. For cost-saving purposes, we did not include atmospheric gases as part of analytical suites in the workplan, and Alameda County approved the plan without requiring us to include

atmospheric gases as part of analytical suites. Therefore the soil gas survey results are valid, and we do not agree with the Alameda County's comment.

2. **Feasibility Study** – You questioned the suitability of the feasibility study and indicated that we should provide **three alternatives** and compare their cost effectiveness in reducing chemical mass in the subsurface.

   We do not agree with this comment. California Code Regulations, Title 23, Division 3, Chapter 16, Underground Storage Tank Regulations (Page 69) state the following: ". . . [2] for sites where the unauthorized release affects or threatens waters with current or potential beneficial uses designated in water quality control plans, the feasibility study shall also identify and evaluates **at least two** alternatives for restoring or protecting these beneficial uses."

   The Report evaluated numerous alternatives; however, only two met conditions set forth in Section 4.3 of the Report.

3. **Multi-phase Extraction (MPE) Pilot Test** – The comment suggests that SOMA should report the drawdown and upwelling condition in the extraction well, in order to evaluate transmissivity of the saturated sediments.

   The comment is vague. For instance, we do not understand what you mean by upwelling. As Section 2.4.5 of the Report indicates, by pumping 1.95 gpm from pilot test wells MW-3 and MW-5, a steady-state dewatering condition was achieved. Upwelling conditions within the vapor extraction wells is caused by applying vacuum to the vadose zone and extracting soil vapor only. In the case of MPE, both water and soil vapor are extracted simultaneously from the extraction well. Therefore, upwelling does not apply. As recommended, the calculation of transmissivity is not critical at this time, since the pilot test results revealed what kind of flow rate can be expected by dewatering the First WBZ during MPE events.

4. **Pump and Treat with Multi-Phase Extraction** – The comment questions effectiveness of the proposed remedial alternative in cleaning up the secondary contamination source next to TWB-1 and MW-6.

   As discussed in the Report, MPE will clean up soil and groundwater next to USTs, where thick smear zone was identified. The proposed pump-and-treat system will prevent further migration of dissolved-phase petroleum hydrocarbons to off-site areas. Pumping on a continuous basis will also lower groundwater levels below the inlet of the migration of chemicals via preferential flow pathways. The report proposes using mobile treatment

system (MTS) on an intermittent basis to remove high levels of contaminants from subsurface. If high levels of chemicals still remain around MW-6, where SOMA proposed installation of two groundwater extraction wells next to MW-6 and DPW-6 (please see Section 4.6 of the Report, second paragraph), the MTS system can be used to remove the high concentrations of chemicals next to TWB-1. Upon receipt of approval from Alameda County, SOMA will prepare a workplan to discuss precise locations and specifications of the groundwater extraction wells next to MW-6 and DPW-6.

5. **Area Well Survey** – The comment encourages SOMA to collect groundwater samples from the other irrigation well located at 1575 153rd Street.

   SOMA concurs with the comment, and will attempt to collect groundwater samples from the well at 1575 153rd Street and report results in the Third Quarter 2008 groundwater monitoring report.

I hope these responses to your comments will assist in approval of our proposed remediation plan to remove groundwater contaminants and obtain regulatory closure in a timely manner. Meanwhile, please call me at (925) 734-6400 if you have any questions or comments.

Sincerely,

Mansour Sepehr, Ph.D, PE
Principal Hydrogeologist

cc: Mr. Mohammad Pazdel