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September 21, 1994
SCI 820.001

Ms. Susan Hugo
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94501

**Request for "No Further Action"
Alternative Compliance Points Monitoring Program
6707 Bay Street
MIBK Tank Area
Emeryville, California**

Dear Ms. Hugo:

Subsurface Consultants, Inc. (SCI) is submitting this letter to (1) transmit a final copy of our "Supplemental MIBK Contamination Assessment" report for the referenced site, and (2) request your concurrence with a "no further action" regulation of the previous MIBK underground tank area under an "alternative compliance points" approach. Extensive investigation and remediation have been conducted within the previous tank area. A summary of site activities including 5 years of groundwater monitoring results are presented in the attached report.

In preparing this request, we have reviewed a draft internal memorandum prepared by the San Francisco Bay Regional Water Quality Control Board (RWQCB), regarding non-attainment of groundwater cleanup levels. This memorandum was dated February 17, 1994, and was prepared by Mr. Steven Ritchie, the RWQCB's executive officer. We understand that the memo contains the RWQCB's most recent guidelines regarding alternative compliance points.

Review of the RWQCB document indicates that areas of non-attainment of groundwater cleanup goals can be approved for sites where (1) dissolved groundwater cleanup is not technically or economically feasible or warranted and/or (2) sites for which the approved cleanup program has not resulted in compliance with water quality objectives. Sites of either type must also satisfy the four following criteria:

■ **Subsurface Consultants, Inc.**

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1. Limited Migration Potential Exists

The responsible party must demonstrate that no significant pollution migration will occur due to hydrogeologic or chemical characteristics of the site.

2. Source Removal Has Occurred

Adequate source removal and/or isolation has been undertaken to limit future migration of chemicals and groundwater.

3. Use of Best Available Technologies Has Been Evaluated and/or Attempted

The responsible party must show that best available technologies are either not technically or economically feasible or have been implemented to their practical extent.

4. Non-Attainment Area Management Plan Has Been Accepted

An acceptable plan must be submitted which addresses containing and managing the remaining risks posed by residual groundwater pollution.

RWOCB Evaluation Criteria

In the case of the MIBK tank area, remedial efforts have resulted in significant source removal but have not reduced contaminant concentrations to non-detectable levels. However, further dissolved groundwater cleanup is not technically or economically feasible or warranted since the plume (1) is very small, (2) poses little environmental or health risk, and (3) is either migrating very slowly at most, or is stable given the hydrogeologic conditions at the site. As a result it appears that the site is appropriate for consideration under an "alternative compliance points" approach. Information to address the four RWOCB evaluation criteria is presented below.

1. Limited Migration Potential

a. Low Permeability Geologic Materials

Subsurface investigation at the site indicates that low permeability geologic materials exist throughout the impacted area. Test borings indicate that the area is underlain by Bay Mud. Bay Mud is characterized as a low permeability, highly plastic silty

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clay. The Bay Mud is overlain by heterogenous fill. Slug tests performed in four monitoring wells completed in the fill indicated hydrologic conductivities on the order of 4.6 to 7.5×10^{-5} cm/sec. This data indicates that the fill also has a relatively low permeability. Hence, we conclude that migration rates at the site are very slow.

Our research indicates that MIBK is highly bio-degradable. Biological testing conducted on soil and groundwater samples from within sandy portions of the fill indicates bacteria, nutrient and oxygen concentrations are conducive to continued in-situ biodegradation. To the extent that limited migration could occur as contamination slowly moves from the clayey soils into the more sandy fill, the contaminants are degraded, contributing to the rapid attenuation of the plume. This serves as a containment mechanism, further limiting migration which, in any event, is minimal due to the low permeability of the fill.

This limited migration potential has been demonstrated through 5 years of groundwater monitoring results from MW-1. MW-1 is situated directly downgradient and within 35 feet of the source. Monitoring of this well has consistently shown non-detectable results, confirming limited migration potential.

b. Horizontal Migration Pathways

As discussed in Section 1a, slug tests performed in the heterogenous fill indicate that the fill permeability is low and does not vary significantly. We conclude that migration pathways associated with variations in the fill material are not likely to significantly promote contaminant migration at the site.

As shown on Plate 2 of the report, a number of underground utilities exist in the impacted area. Field measurements indicate that the utilities do not extend below the groundwater level and hence, do not represent potential migration routes through the site. The monitoring results also confirm the lack of significant horizontal migration pathways.

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c. Vertical Conduits

As discussed in Section 1a, the site is underlain by Bay Mud which has a relatively low permeability. For this reason, vertical migration downward is unlikely. Review of historical records indicates that the site was reclaimed from the Bay beginning in about 1947, and was used as a landfill. As a result, the presence of old wells, which could represent potential vertical conduits to deeper aquifers, is extremely unlikely.

Considering all the factors discussed above we conclude that the plume is very limited and the potential for future migration is extremely low. This has been demonstrated by thorough site characterization and the results of 5 years of groundwater monitoring.

2. Source Removal

Removal of highly contaminated soil in the vadose zone and capillary fringe was accomplished by the operation of a soil vapor extraction system (SVES) at the site. Concentrations of MIBK in soil following tank removal but prior to remediation ranged up to 5,000 mg/kg. Following operation of the SVES system MIBK concentrations were not found above detection limits (10 ug/kg) in the tank pit area. These results confirm that significant source removal has been achieved.

3. Technical Feasibility of Best Available Technologies

Soil vapor extraction system (SVES) and conventional groundwater pump and treat technologies were implemented at the site. The SVES system was successful in remediating the contaminated soil within and near the tank pit. We conclude that the SVES system has removed contaminants to the most practical extent possible. The soil contamination which remains downgradient of the tank pit is bound within low permeability clays, well below the current groundwater level. As a result, SVES is not a feasible technology to remediate the remaining soil contamination.

Because of the limited permeability of the soils underlying the site, the previous groundwater extraction system was only capable of operating at a very low flow capacity, (i.e., less than 0.2 gpm). In addition to the low flow rate, bacteriological conditions resulted in biological fouling of the extraction/treatment systems. Given these hydrogeologic constraints, which are inherent to the site, we conclude that additional groundwater extraction is not feasible nor economical. In our opinion, there are no cost effective alternatives.

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4. Non-Attainment Area Management Plan

The following plan outlines steps which will be undertaken to contain and manage any remaining risks posed by residual groundwater contamination.

1. Current/Anticipated Land and Water Use

The site is currently occupied by one- and two-story structures which are surrounded by asphalt/paved parking lots and landscaped areas. The structures are used for warehouses, light industrial manufacturing and offices. The site is zoned C/O (commercial and office) which does not allow residential use. There are no foreseeable changes in use.

As previously discussed, the site is in a landfill area which was reclaimed from the San Francisco Bay. The shallow groundwater beneath the site has no current beneficial uses. Future beneficial use is unlikely given (1) the occurrence of background levels of groundwater contamination throughout the entire Emeryville landfill area, and (2) the relatively low potential yield of the underlying geologic formation.

2. Compliance Monitoring Program

a. Notification to Current and Future Owners, Lessees or Renters

The current property owner is fully aware of the MIBK contamination. He was apprised of its existence in the course of his purchase of the subject property, and the remediation has proceeded during his occupancy of the site. Pursuant to California Health and Safety Code § 25359.7, he must give written notice of the contamination to any subsequent "buyer, lessee or renter", prior to a proposed "sale, lease or rental".

b. Groundwater Monitoring

It is our opinion that the 5 years of groundwater monitoring results from MW-1 provide a record of compliance with water quality objectives which is consistent with the proposed alternative compliance points approach. The results represent a wide range of seasonal water level variations and consistently show no impact. We conclude that ongoing monitoring is unwarranted in that the site characterization and monitoring results adequately demonstrate the lack of significant migration potential at the site. For these reasons ongoing monitoring is not proposed.

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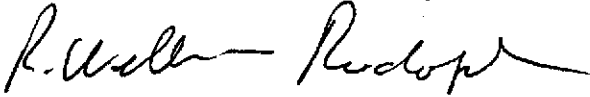
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We propose properly abandoning the wells by complete removal, grouting the remaining boreholes with cement/bentonite grout. The well abandonment will be conducted in accordance with Alameda County Flood Control and Conservation District (Zone 7) guidelines.

We appreciate your cooperation in this matter and look forward to your prompt review and comment.

Yours very truly,

Subsurface Consultants, Inc.



R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/96)

RWR:sld

Attachments: Supplemental MIBK Contamination Assessment
Subsurface Consultants, Inc., September 21, 1994