



Hygienetics, Inc.

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November 19, 1990

Mr. Rico Duazo
California Regional Water Quality
Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6000
Oakland, California 94607

RE: Livermore Arcade Remediation Plan

Dear Mr. Duazo:

Hygienetics is pleased to submit on behalf of Grubb & Ellis, the final proposed locations for the remediation system at the Livermore Arcade Shopping Center. Optimum locations for the extraction systems were determined as shown in Figure 1. One extraction well (E3) will be installed on the north side of Mike's One Hour Cleaners located on the Livermore Arcade Shopping center property. Two extraction wells (E1, E2) will be installed near Western and Ventura Avenues on the Union Pacific Railroad easement. Grubb and Ellis has requested permission to install two extraction wells and a remediation unit on this property.

The groundwater extracted at the three wells will be treated by liquid phase carbon absorption filters. The carbon filters will be kept in storage sheds along with the electrical control boxes needed to operate the pumps. These metal storage sheds (8'x10'x8') will be locked securely at all times.

A hydrogeologic model was generated by hydrogeologist Dr. Keshar Goyal based on data acquired from a 48 hour pump test performed at MW12. From this model it was determined that a 200 foot radius of influence for each of the three proposed extraction wells can be achieved after a sustained pumping period. The steady state pumping rate for the extraction wells will be 0.7 gpm (gallons per minute). The coefficient of permeability for the aquifer has been conservatively estimated at 2.7 ft/day.

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Enclosed please find the diagram of the proposed location of the remediation system. Should you have any questions or comments concerning the proposed remediation system or any other aspects of this project, please do not hesitate to call me.

Sincerely,

HYGIENETICS, INC.



Mike Wright, R.E.A.
Project Geologist

MW:ss/48001.36
CDRV/L001CRWQ

cc: Gil Wister
Enclosure

December 4, 1990

Mr. Gil Wistar
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

RE: Livermore Arcade Remediation - Sampling and System Maintenance

Dear Mr. Wistar,

Hygienetics is submitting this letter as an addendum to our remediation scope of work dated, November 19, 1990, and in response to your request for clarification of the above referenced topics.

Groundwater samples will be collected from specific monitoring wells on a quarterly basis in order to determine the effectiveness of the proposed remediation system. The samples will be analyzed at a California licensed environmental laboratory by EPA Method 8240. PCE concentration changes at each location will be documented. The monitoring wells are located near the perimeter of the plume and at the extraction points as shown on the attached site plan.

The extraction wells will pump groundwater into a siltation tank located in each storage shed. From the siltation tank, the groundwater will enter liquid phase carbon absorption filters. The treated water leaving the filters will be discharged into the Livermore Sanitary Sewer according to requirements set forth by the City of Livermore, California. Hygienetics will collect a groundwater sample before it enters the carbon filters, and again, after it has passed through the filters. This will document the effectiveness of the filters on reducing PCE concentrations in the water before the water is discharged into the sanitary sewer. Sampling at the filter locations will be performed on a weekly basis during system start-up. The treated groundwater will be sampled prior to discharge on a monthly basis for the first year, and then on a quarterly basis thereafter.

Periodic inspection and maintenance of the mechanical and electrical systems will be provided by the remediation system contractor. The system controls will be installed with an electronic monitoring device which will notify the responsible party of a malfunction in the system. The structure of the storage shed and all equipment configurations will meet all Livermore building codes and fire department requirements. The liquid phase carbon absorption drum lifetimes are based on the loading capacity of the filter, the steady state pumping rate, and the contaminant concentration levels. Hygienetics will make sure the filters are replaced on a regular basis when 75% of their projected lifetime has been reached or sooner, if breakthrough is detected during sampling.

Specific design details will be submitted to you for your approval following preparation of the final design plans. Your assistance in expediting the approval of our preliminary remediation plan is greatly appreciated.

Sincerely,

Hygienetics, Inc.


Michael Wright, R.E.A.
Environmental Geologist

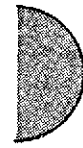
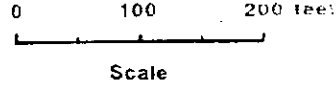


LEGEND

- MW10 Hygienetics Monitoring Well
- VS-1 Versar Monitoring Well
- CWS-3 California Water Service Well

- E1 ● Extraction Well
- Remediation Unit

—10 ppb— PCE Concentration Contour



Area of Influence



Sampling Location



**LIVERMORE ARCADE
and Vicinity
Livermore, California**

Hygienetics Inc.
Industrial Hygienists
Architects / Engineers
Environmental Consultants

PROJECT NO.	4800136
DRN. BY	
REV.	DATE DESCRIPTION

**Remediation System
Proposed Location**

DATE	

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