Chevron U.S.A. Products Company
2410 Camino Ramon, San Ramon, California • Phone (510) 842-9500
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

November 3, 1992

Mr. Scott Seery
Alameda County Health Department
80 Swan Way, Room 200
Oakland, CA 94621

Subject: Former Chevron Station # 9-5607, 5269 Crow Canyon Road, Castro Valley, CA
Proposal for remediation system modifications

Dear Mr. Seery:

On August 31, 1992, I sent a proposal (copy attached) for modifying the remediation system in operation at the subject site to Mr. Rich Hiett of the San Francisco Bay Regional Water Quality Control Board (RWQCB) with a copy to your attention. This proposal was generated at the request of the RWQCB and the Alameda County Health Department (ACHD).

I am writing this letter to find out the status of the review of the proposal by the RWQCB and the ACHD. As stated in the proposal, I would appreciate receiving the concurrence of the RWQCB or the ACHD before performing the system modifications. I feel that prior concurrence is necessary in this case due to miscommunications in the past between Chevron and the ACHD regarding this site. A copy of this letter is also being sent to the RWQCB.

If you have any questions or comments, I can be reached at (510) 842-8658.

Sincerely,

Clint B. Rogers

Clint B. Rogers
Environmental Engineer

Attachment

cc: Rich Hiett,San Francisco Bay Regional Water Quality Control Board, Oakland, CA
Kevin Hinckley, 5269 Crow Canyon Road, Castro Valley, CA 94546
Paul Hehn, Geraghty and Miller, Richmond, CA

COPY

Chevron U.S.A. Products Company
2410 Camino Ramon, San Ramon, California • Phone (510) 842-9500
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

August 31, 1992

Mr. Rich Hiett
San Francisco Bay Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, CA 94612

Subject: Former Chevron Station # 9-5607, 5269 Crow Canyon Road, Castro Valley, CA
Enclosed Fate and Transport Model comparing extraction options (CRTC, 8/13/92)
Proposal for remediation system modifications

Dear Mr. Hiett:

This letter is written in response to the letter from the San Francisco Regional Water Quality Control Board (RWQCB) to Chevron dated June 4, 1992 regarding the subject site. The RWQCB letter stated that the Alameda County Health Department (ACHD) had referred oversight of the subject case to the RWQCB. The letter requested that data concerning the performance of the groundwater extraction system be submitted to the RWQCB by June 29, 1992. On June 26, 1992 the requested performance data including the extraction rates and the radius of influence of extraction wells RW and C-9 was submitted by Chevron. The June 26 submittal proposed the use of a groundwater fate and transport model to determine the projected future characteristics of the benzene plume under various extraction system scenarios. Chevron's proposal called for the use of the model results to help determine the appropriateness of any modifications to the current extraction system design.

The results of the fate and transport modeling are enclosed for your review. The modeling was performed by hydrogeologists at Chevron Research and Technology Company (CRTC) in Richmond, California. For accuracy, the model was calibrated to actual groundwater data collected over the course of the site investigation, remediation, and monitoring activities. The model was utilized to predict the future size and concentration of the dissolved benzene plume under various groundwater extraction well placement scenarios. These extraction system scenarios included:

- no groundwater extraction at the site (0 wells)
- groundwater extraction from wells RW and C-9 (2 wells, the current scenario)
- groundwater extraction from wells RW, C-9, and C-6 (3 wells)
- groundwater extraction from wells RW, C-9, C-6, and RW-2 (4 wells)

The model predicted the characteristics of the benzene plume in 1996 under each of the above groundwater extraction well options. In summary, the model showed:

- With no groundwater extraction at the site, the benzene plume in 1996 would remain virtually unchanged from its present size and concentration in 1992. This is because the rate of natural degradation of benzene along the boundary of the plume was shown to be equal to the rate of benzene migration toward the boundary.

What rate was used?

- With the continued use of the current groundwater extraction system which consists of the two wells RW and C-9, the benzene plume in 1996 would only be slightly smaller than it's present 1992 size. This indicates that the current extraction system is capable of counteracting the threat of benzene migration to Crow Creek, but it is not capable of significantly decreasing the benzene plume over the next several years.

- With the addition of well C-6 to the current extraction system, and thus extracting from a total of three wells, the benzene plume would be greatly reduced in 1996 from its current size. The improved capture of the groundwater extraction system in conjunction with the degradation process would cause a shrinking of the dissolved benzene plume over a relatively short time frame.

- With the addition of well C-6 and a new well RW-2 to the current extraction system, thus bringing the total number of extraction wells to four, the benzene plume would be greatly reduced by 1996. However, the effect of four extraction wells does not appear to be significantly different from the effect of three wells.

I encourage your review of the model parameters and results. I requested CRTC to write the report in a "reader-friendly" manner to facilitate easy understanding by all readers without requiring previous groundwater modeling experience. If there are any questions regarding the use of the model or the interpretation of its results, please do not hesitate to call me to discuss.

The model was used to predict future characteristics of the benzene plume under a variety of viable groundwater extraction options. Other remedial approaches were considered, but each was discounted due to being unfeasible based upon the site conditions and property use. For instance, excavation of impacted soils was ruled out because Chevron no longer leases the property and legally has no permission to excavate, because the current business use of the property would be irreparably hampered by an excavation project, and because excavation of impacted soils would increase the risk of exposure for nearby residents. In addition, vapor extraction and air-sparging remedial techniques were determined to be unfeasible due to the fine grained clay stratigraphy of the subsurface. One remedial technique in addition to groundwater extraction which may prove beneficial is the use of a hydrocarbon skimmer in well C-3. The skimmer would effectively remove any separate phase product occurring in the well and thus help to remove the source of dissolved hydrocarbons.

Based upon my review of the model results and the associated costs of the various extraction system scenarios, I propose the addition of a third well, C-6, to the current groundwater extraction system. The marginal difference in performance between the four well and the three well extraction systems does not justify the additional expense of the four well system. The three well system would utilize an already existing well, while the four well system would require the drilling and installation of an additional extraction well. In addition to the use of well C-6 for groundwater extraction, I propose the installation of a hydrocarbon skimmer in well C-3 to remove periodically occurring separate phase hydrocarbons from the source area.

Upon receiving concurrence with this proposal from the RWQCB and/or the ACHD, Chevron will contract the proposed work and schedule it in a timely manner.

If you have any questions or comments, I can be reached at (510) 842-8658.

Sincerely,

Clint B. Rogers

Clint B. Rogers
Environmental Engineer
Site Assessment and Remediation

Enclosure

cc: Scott Seery, Alameda County Health Department, Oakland, CA
Kevin Hinckley, 5269 Crow Canyon Road, Castro Valley, CA 94546
Paul Hehn, Geraghty and Miller, Richmond, CA
Sheldon Nelson, CRTC, Richmond, CA (w/o enclosure)