Chevron U.S.A. Products Company
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Operations

January 29, 1993

Ms. Eva Chu
Alameda County Environmental Health
80 Swan Way, Rm 200
Oakland, CA 94621

Re: Former Chevron Service Station No. 9-1723
[redacted]fornia

9757 San Leandro St.
9401 San Leandro St.

Dear Ms. Chu :

As we discussed earlier at your office on January 27, 1993, Chevron is proposing a risk-based analysis be performed at the above referenced site. Enclosed is the risk-based analysis work plan from Geraghty & Miller, Inc. dated January 27, 1993. Please review this risk assessment work plan with Dr. Ravi Arulanantham of Alameda County Environmental Health.

At this time, Chevron has instructed Geraghty & Miller not to perform the "Impact of Off-site Migration" analysis for the reasons that Geraghty & Miller has described.

Please refer to the work plan for additional information. If you have any questions or comments, please feel free to contact me at (510) 842-8752.

Sincerely,

Chevron U.S.A. Products Co.

Kenneth Kan
Engineer

LKAN/MacFile 9-1723R

Enclosure

cc : Dr. Ravi Arulanantham, Alameda County Environmental Health
80 Swan Way, Rm. 200, Oakland, CA 94621

Mr. Richard Hiett, RWQCB-San Francisco Bay Region
2101 Webster Str., Suite 500, Oakland, CA 94612

Ms. Bette Owen
Chevron U.S.A. Products Co.

GERAGHTY & MILLER, INC.
Environmental Services

JAN 29 '93 PWM

Ground Water *Hydrocarbon* *Remediation* *Education*

January 27, 1993

Mr. Kenneth Kan
Chevron U.S.A. Products Company
P.O. Box 5004
San Ramon, CA 94583-0804

RE: Work Plan for Risk-Based Analysis
Former Chevron Service Station #9-1723
98th Avenue & San Leandro Street, Oakland, California.

Dear Mr. Kan:

Geraghty & Miller, Inc., is pleased to submit this work plan to prepare a risk-based analysis for the former Chevron Service Station #9-1723 at 98th Avenue and San Leandro Street in Oakland, California. This work plan presents the approach for developing a risk-based analysis to evaluate the suitability of this site for future development. In the plan, investigating this question involves assessing the potential risks due to future hypothetical exposure to impacted media at the site. Also included in this work plan is an additional (optional) analysis to assess the potential impact of off-site migration of contaminants detected in ground water and subsurface soils at the site. One of the difficulties of this risk assessment is the evaluation of only exposures to constituents originating from the former Chevron Service Station #9-1723 and not from other operations at the former Gerber Products Facility. As a result, the risk assessment will focus only on the constituents detected at the former Chevron Service Station #9-1723 or directly downgradient of the site.

APPROACH

The former Chevron Service Station #9-1723 was located on the northeastern corner of a property currently owned by Gerber Products. The station was closed 30 to 40 years ago, and the Gerber Products Facility consisting of offices, warehouses, and food processing buildings was built (Harding Lawson Associates, [HLA], 1990). The property currently is occupied by a construction contractor group, a plastics recycling center, an automobile repair yard, offices, and vacant buildings. The automobile repair yard is operated on the former Chevron Service Station #9-1723 site. Site investigations for the former Gerber Products Facility and the former Chevron Service Station #9-1723 were performed by Beta Associates (1987), Groundwater Technology, Inc. (1988), and HLA (1990). These site investigations indicated the presence of benzene, toluene, ethylbenzene, xylenes (BTEX) and TPH in soils and/or ground water. Ethylbenzene was not detected in soil.

The thrust of the current work is toward evaluating potential development of the site and possible risks associated with future land use. As stated above, an automobile repair yard currently operates on the site and the area is used for commercial or industrial uses. For a risk-based analysis, the most conservative hypothetical land-use scenario is residential. Geraghty & Miller proposes examining the potential risk to a current worker at the automobile shop, and hypothetical future child and adult residents living in a home built on the site, or a construction worker involved in excavating soil during the hypothetical building project. For the current worker, exposure to surface soil does not occur since the site is paved; therefore, the only exposure route would be inhalation of volatiles originating in the subsurface soil or ground water. For the construction worker and the residents, especially the child, the exposure to impacted subsurface soils would be evaluated as the principal route of exposure. Implicit in this analysis is the assumption that the subsurface soils would somehow be brought to the ground surface during construction activities. For the resident, however, the principal exposure would be to constituents detected in ground water, since the property is likely to be covered by a house and landscaping, thereby precluding frequent contact with soil. Water in this area is supplied by the East Bay Municipal Utilities District, reducing the possibility of its being used as a potable source of water to a hypothetical future residence. For such a residential exposure scenario, the most likely exposure route to contaminants in ground water and subsurface soils would be via volatilization through the soil and infiltration into the air within the home. Therefore, Geraghty & Miller proposes evaluating the potential risk for one current and three hypothetical future exposure scenarios: (1) inhalation exposure to volatile components from subsurface soil and ground water for a current on-site worker, (2) oral, dermal, and inhalation exposure to subsurface soils for a construction worker, (3) oral, dermal, and inhalation exposure to surface soils for child and adult residents, and (4) inhalation exposure to volatile components in subsurface soils and ground water for an on-site resident.

SCOPE OF WORK

The work product to be produced is a stand-alone report presenting the results of the analysis, along with relevant site information, detailed explanations of the techniques of analysis, supporting toxicity and chemical/physical information for the contaminants of concern in on-site media, and a discussion of the inherent uncertainties associated with such an analysis. The following subsections describe the major components of the work which will go into generation of this report.

Site Characterization

Characteristics of the site, such as history, climate, topography, local land use, local populations, soil type, depth to ground water, ground-water flow, and distance to ground-water discharge, will be presented. Site characterization data provide the basis for realistic assessment of exposure pathways. The site characterization task will refer to previously prepared documents and briefly discuss the results of previous investigations and remediation activities. The results of previous sampling efforts at the site will be presented and analyzed, identifying the contaminants of interest (BTEX and total petroleum hydrocarbons [TPH] as gasoline) and the media in which they occur.

Toxicity Assessment

The inherent toxicological properties, potential adverse health effects, and dose-response relationships for site-related constituents (BTEX and TPH) will be reviewed. Because TPH are a class of compounds, there are no toxicity values specific to TPH. Therefore, a surrogate compound will be used to calculate potential risks due to exposure to TPH. The toxic endpoints and toxicity values for BTEX and TPH (as represented by the surrogate) will be presented.

Exposure Assessment

The potential for exposure to constituents detected in soils and ground water beneath the site will be evaluated using currently available site-specific information. Surface and subsurface soil data from samples collected during the site investigations will be used to represent soil exposure. The potential for oral, dermal, and inhalation exposure to particulates and volatile components from the subsurface soils during hypothetical future on-site construction activities will be presented. The most likely exposure groups during the construction activity would be the construction workers and, following construction, adult or child residents living on the site. Exposure parameters used to define these hypothetically exposed individuals (body weight, exposure duration, exposure frequency, etc.) will be selected using USEPA guidance and site-specific information.

The possibility of potable use of the ground water in the future will be addressed; however, this is an unlikely scenario (due to generally poor ground-water quality in the area and the fact that the East Bay Utilities District provides water to the area. Therefore, it is anticipated that exposure to constituents detected in ground water at the site will be evaluated using a current worker and hypothetical future resident scenario in which an on-site resident is exposed to ground-water contaminants which volatilize from beneath the site and infiltrate into the automobile repair shop and the home. The current worker and hypothetical future on-site

resident scenario will be evaluated using default exposure parameters (body weight, breathing rate, residence time, etc.) provided in USEPA guidance and indoor air concentrations calculated using transport modeling.

Ground-Water Vapor Infiltration Model

The potential air concentrations within the home due to migration from ground water beneath the site will be calculated using a model in which contaminants in the ground water volatilize, diffuse to the soil surface, and filter into the home through the foundation. Site-specific soil porosity (estimated based on descriptions contained in the boring logs) will be used in evaluating this migration potential for the relevant constituents. This information is already available from previous investigations at the site. Conservative (protective) assumptions will be used to demonstrate whether current worker and hypothetical future residential use of this site would present significant human health risk (according to USEPA's acceptable risk levels) to the workers or residents.

Development of Remediation Goals

Site-specific remediation goals for soil and ground water will be calculated using the three hypothetical future exposure scenarios described previously. These remediation goals will be calculated using conservative exposure assumptions and based on levels of risk considered acceptable by the USEPA. Comparison of site-related concentrations with these health-based remediation goals will serve as a means of demonstrating whether the site is suitable for future development. These remediation goals also can serve as guidelines in determining whether the results of future ground-water monitoring and soil (if any) sampling are acceptable or require remediation. If the site-related concentrations are greater than the calculated remediation goals (indicating the need for some sort of remedial action before residential development), these goals can be used in developing a remediation plan.

In performing this analysis, assumptions will be made according to guidance from USEPA and the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, and according to professional judgement. These assumptions and the major uncertainties involved with this risk-based analysis will be presented in the report.

IMPACT OF OFF-SITE MIGRATION (Optional Task)

This is an additional analysis which can be included as a part of the risk-based analysis report for the site or as a separate task. In this, Geraghty & Miller would assess the potential for off-site exposure to constituents detected in on-site media. Since off-site exposure to surface

and subsurface soils at the site presumably would be less than the potential on-site exposures assessed in the risk-based site analysis, the concern here would be with migration of contaminants in the ground water to a downgradient exposure point. The potential for on-site ground-water contaminants to migrate downgradient can be evaluated using ground-water flow information gathered during previous investigations and a ground-water transport model, making conservative assumptions in selecting unknown parameter values. Site-specific values for hydraulic conductivity and transmissivity of the water-bearing zone were determined by aquifer testing performed by HLA. The model can be used to predict the maximum distance the plume will travel. The utility of this model is to predict the migration of the plume and to identify whether or not acceptable risk levels will be exceeded at a downgradient exposure point. If San Francisco Bay is the nearest downgradient discharge point, or another surface water body predicted concentrations will be compared to water-quality standards for the protection of aquatic life. The results of this off-site ground-water transport analysis can be included as a part of the on-site risk-based analysis report or delivered as a separate document, although obtaining additional site-specific data may require additional time in the schedule.

The one disadvantage to performing ground-water modelling at the site is that there is no good way to verify the results of the model. The Chevron site is on the same property as the former Gerber Products facility and there is contamination at the site originating from Chevron as well as other users of the facility. Because the same constituents may have been used by others, there is no way of determining through the use of monitor well sampling how much is coming from Chevron and how much is from other users of the property. The utility of the modeling results would be only in evaluating potential impacts to downgradient surface water bodies.

SCHEDULE

Geraghty & Miller will initiate the risk-based analysis tasks upon receipt of the signed work authorization and will conduct the work in a timely manner, as agreed to in communications with Chevron. Geraghty & Miller estimates that approximately 4 weeks will be needed to complete the activities outlined in this work plan.

Please call us if you have any questions or comments. We look forward to working with you on this project.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Shawn Lee Sager

Shawn L. Sager, Ph.D.
Principal Scientist and Project Manager

Shawn Lee Sager for

Gary W. Keyes, P.E.
Principal Engineer and Project Officer

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REFERENCES

Beta Associates, 1987. Subsurface Soil and Ground Water Contamination Investigation, Gerber Products Facility, 9401 San Leandro Street, Oakland, California. Report to Kalman Companies, 3132 Laguna Street, San Francisco, California. Project 186-1.1. May 29.

Groundwater Technology, Inc., 1988. Subsurface Hydrocarbon Investigation, Gerber Products Company, 9401 San Leandro Street, Oakland, California. November 17.

Harding Lawson Associates (HLA), 1990. Phase III Site Investigation Addendum, Former Gerber Products Facility, Oakland, California. HLA Job No. 19459,001.02. February 21.