Texaco Refining
and Marketing Inc

100 Cutting Boulevard
Richmond CA 94804

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June 19, 1997

ENV - STUDIES, SURVEYS, & REPORTS
930 Springtown Blvd., Livermore, California
Work Plan for RBCA Tier 2 Analysis

Ms. Eva Chu
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Fl. 2
Alameda, CA 94502-6577

Dear Ms. Chu:

Enclosed is the *Work Plan for RBCA Analysis*, dated June 16, 1997 and completed by Kaprealian Engineering, Inc. for the subject site. The technical report identified in the Summary section will be forwarded to you as soon as the Tier 2 analysis is complete.

If you have any questions or comments regarding this site, please call me at (510) 236-9139.

Best Regards,
Texaco Refining and Marketing Inc.

Karen E. Petryna

Karen E. Petryna
Project Manager
Environment, Health & Safety

KEP:hs
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Enclosure

cc: Mr. Bob DeNinno The Southland Corporation (w/ enclosure)
Mr. Sarkis Soghomonian, Kaprealian Engineering, Inc. (w/o enclosure)

RAOFile-UCPFile (w/enclosure)

PR: RJ

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P95-0711.P2
June 16, 1997

Texaco Refining and Marketing, Inc.
108 Cutting Blvd.
Richmond, CA 94804

Attn: Ms. Karen E. Petryna

RE: Work Plan for RBCA Analysis
Former Texaco Service Station
930 Springtown Boulevard
Livermore, California

Dear Ms. Petryna:

Per your request, and as discussed with Ms. Eva Chu of the Alameda County Health Care Services Agency (ACHCSA), Kaprealian Engineering, Inc. (KEI) has prepared this work plan. The work plan outlines the rationale and assumptions for input parameters to conduct Risk Based Corrective Action (RBCA) analysis for the subject site. As discussed with Ms. Chu on May 6, 1997, Texaco can request Site Closure from the ACHCSA upon completion of the RBCA analysis with a passing result.

SITE BACKGROUND

The subsurface investigation was initiated in September 1984 with the installation of two groundwater monitoring wells (MW-A and MW-B). The underground fuel storage tanks were removed in June 1985. Monitoring wells MW-1 through MW-3 were installed in June 1985, monitoring well MW-4 was installed in September 1985, and monitoring wells MW-5 and MW-6 were installed in November 1986. One soil boring was drilled and two additional monitoring wells (MW-7 and MW-8) were installed in December 1989 in order to further define the extent of hydrocarbons in soil and ground water. Wells EW-1 and VE-1/SP-1 were installed in October 1992 and subsequently incorporated into the vapor extraction system which operated at the site from September 1994 through October 1995. Monitoring wells MW-6 and MW-7 were destroyed in December 1995 and January 1996. The site is currently a paved lot with a convenience store. A Location Map and a Site Plan are attached to this work plan.

RBCA ANALYSIS

The RBCA process is an analytical technique for assessment and determination of response to contamination associated with hydrocarbon releases. The technique integrates U.S. Environmental Protection Agency (EPA) risk assessment practices with traditional site investigation and remediation to determine cost-effective measures for protection of human health and environmental resources. The ASTM standard for this analysis is ASTM E-1739 "Standard for Risk-Based Corrective Action at Petroleum Release Sites."

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

Under RBCA, exposure to contaminants at petroleum release sites are characterized in terms of three steps: sources, transport mechanisms, and receptors. The analysis evaluates the need for corrective action(s) to prevent human or environmental exposure to harmful levels of contaminants. Based on the three-step exposure process model, corrective actions could involve removal or treatment of the source, interruption of transport mechanisms, or control of activities at potential receptors.

RBCA analysis can be performed at a Tier 1 or Tier 2 level. The more comprehensive Tier 2 level analysis using site specific data will be performed in the proposed study.

Within Tier 2 analysis, three options exist for evaluation. The most comprehensive option (Option 3) will be used. This option evaluates the constituents of concern on a cumulative basis as well as individually. The RBCA analyses will be performed using the RBCA Spreadsheet System of Groundwater Services, Inc. of Houston, Texas. The software consists of a series of linked worksheets in Microsoft Excel 5.0.

Proposed Input Parameters - Ground Water

Ground water samples are collected from the monitoring wells during the on-going monitoring and sampling program. Therefore, the laboratory results for benzene, toluene, ethylbenzene and xylenes (BTEX) constituents and methyl tert butyl ether (MTBE) from monitoring wells MW-A, MW-B, and MW-1 through MW-8 for the past four samples, if available, will be input into the RBCA software. These results will then be utilized by the software to calculate representative concentrations with a 95% upper confidence level. These calculated representative concentrations will then be used as input parameters.

Proposed Input Parameters - Soil

Soil sampling has been conducted during the removal of the underground fuel tanks, drilling of soil borings and installation of monitoring wells. All available soil analytical data for BTEX constituents will be collected and input into the RBCA software. These results will then be utilized by the software to calculate representative concentrations with a 95% upper confidence level. These calculated representative concentrations will then be used as input parameters.

Transport Mechanism and Receptors

On May 19, 1997, a representative of KEI performed a well survey for the subject site at the Sacramento office of the California Department of Water Resources (DWR). DWR records for water-

producing wells within 1,000-feet of the site were reviewed. This area is encompassed by subsections E, F, L, M, N, and P of Section 9, Township 3 South, Range 2 East. Monitoring wells or cathodic protection wells were not surveyed.

According to DWR records, the only water-producing well within 1,000-feet of the subject site is an irrigation well installed in 1957. According to the log of the well, it was completed to a depth of 252 feet below grade and is located 500 yards north of the junction of Highway 50 and Livermore-Tracy Road, which would correspond to about 650-feet north of the site. The screened interval of the well begins at greater than 100 feet below grade. If this well still exists, it is unlikely that any hydrogeologic communication could occur with the uppermost aquifer monitored in the investigation of the subject site. Therefore, it will be assumed that there is no potential ground water/potable water use on-site or off-site.

The soil exposure pathway will be active. The analysis will therefore account for potential on-site receptors via ingestion of soil or dermal contact by an on-site commercial receptor. Analysis for off-site soil exposure receptors will not be conducted. The RBCA analysis will also account for air exposure pathway with potential on-site receptors of volatiles and/or particulates from surface and subsurface soils and volatiles from ground water to ambient air. and indoor air

SUMMARY

The results of the proposed RBCA analysis will be summarized in a technical report. This report will include the results of the analysis with output sheets from the RBCA analysis software.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants. Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either

expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

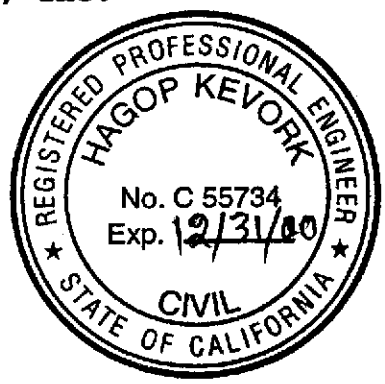
Should you have any questions regarding this work plan, please do not hesitate to call at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Hagop Kevork, P.E.
Senior Staff Engineer

License No. C55734
Exp. Date: 12/31/00



Sarkis A. Soghomonian
Project Engineer

SAS:jfc